

THE LEPTOCORISINAE
(HETEROPTERA : ALYDIDAE)
OF THE WORLD



BY

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SYNOPSIS

Prior to this revision, the subfamily Leptocorisinae Stål contained eight genera and thirty eight species, including major rice pests of the Far East. There was confusion over the identities of many species and since Stål (1873) no world-wide revisional work had been undertaken and in his work only fourteen species (including some synonyms) were covered.

During the present study, three new tribes, one new genus, two new subgenera, nineteen new species have been described and one species, because of its homonymy, has been renamed. *Stenocoris* Burmeister (1839) (subgenus sensu Stål, 1873) has been given generic rank and has been separated from *Leptocorisa* Latreille, 1829. *Rhabdocoris* Kolenati, 1845 (subgenus of *Leptocorisa* Latreille sensu Stål, 1873) has been synonymized with *Leptocorisa*. The undescribed mis-identified type-species of the subgenus *Erbula* has been renamed and described. Nine previously described species have been considered synonyms, whilst four species regarded as synonyms by earlier workers have been reinstated.

INTRODUCTION

LEPTOCORISINAE Stål is a subfamily of the coreoid family Alydidae and contained, prior to the present revision, eight genera and thirty eight species, including a number of important rice pests of the Indochina, Malaya and Australian Sub-regions.

In the whole subfamily, there has been confusion and uncertainty over the identification of species. For example, China (1930), in "Insects of Samoa and other Samoan terrestrial Arthropoda", expressed his doubts on the specific identity of *Noliphus discopterus* Stål and stated that perhaps it was a local race of *N. insularis*

Stål. Villiers (1955), formulating keys for the species of French African *Stenocoris* Burmeister, then regarded as a subgenus of *Leptocoris* Latreille, suggested the synonymy of *S. (Erbula) distinguenda* (Blöte, 1937) with *S. (E.) elegans* (Blöte, 1937).

During the present work the forms of male and female genitalia (Ahmad & Southwood, 1964) have been found to be of great taxonomic value, clearly separating the species. The structure of female genitalia, and in particular the shape of spermatheca, have suggested that Oriental and Australian species of *Leptocoris* Latreille, 1829, (previously considered under the subgenus *Rhabdocoris* Kolenati, 1845) should be separated from Ethiopian, Nearctic and Neotropical species (previously considered under the subgenera *Stenocoris* Burmeister, 1839, *Erbula* Stål, 1873 and *Leptocoris* s. str. Stål, 1873). Other characters found to be of value are as follows:

- (a) The form of head, its colouration and its sutures.
- (b) Length and colour of antennal segments.
- (c) Size of rostrum and length of the components.
- (d) The comparison of the interocellar distance with the distance between an ocellus and an eye (in both cases including the diameter).
- (e) Length, breadth and the colour of pronotum.
- (f) The posterior margin of seventh abdominal tergum in ♂ and the seventh abdominal sternum in ♀.
- (g) In ♂, the shape of the pygophore, claspers, thecal appendages and the form of vesica when fully everted.
- (h) In ♀ the first gonocoxae, first gonopophyses, second gonopophyses and spermathecal shape.

Three of Bergroth's genera, *Dicrorymbus*, *Xenoceraea* (described within *Leptocorixaria* near *Mutusca* Stål, 1866 in 1918) and *Procamptus*, also described under *Leptocorixaria* in 1925, have been excluded from the subfamily Leptocorisinae and have been transferred to the tribes Dasyini Brown, 1955 and Procamptini trib. n. of the subfamily Coreinae (sensu Stål, 1873) (Ahmad, 1964).

MATERIAL AND METHODS

A large quantity of material (about 10,000 specimens) of the group was borrowed from major museums and personal collections from all over the world. (A complete list of these museums and of those who lent their personal collections is given under Acknowledgments.) Freshly prepared material (in 70% alcohol) was also obtained by the courtesy of Dr. J. W. Evans (Australian Museum, Sydney) and Dr. G. Rothschild (Sarawak Agricultural Institute).

Every effort was made to examine and dissect the genitalia of the holotypes of all species (including those believed to be synonyms). In the great majority of cases it has been possible to do this or obtain authoritative information about the loss or damage of the original holotype, so necessitating the designations of neotypes. Lectotypes have also been designated from syntypes in a few cases. A full account of the circumstances and action taken is given for each species.

♂ and ♀ genitalia were dissected after softening the terminalia in 10% potassium

hydroxide solution. It was found easiest to inflate the aedeagus in water just after it was softened. The form of the genitalia was considered to be a reliable character for distinguishing species, as little intergradation was found between its form in two allied species and within a species as many as twenty five examples from widely separated localities were dissected and found to have similar genitalia. Large structures were stained in 1% acid fuchsin in acetic acid and were examined in methyl benzoate, cedarwood oil or creosote. All the drawings were made by using a squared eyepiece under a binocular microscope, from the type specimen when available. Genital structures were preserved in glycerine in small tubes and were pinned with the insects.

All measurements were taken by using micromillimetre eyepiece graticules. When available, five specimens of each sex were measured and extreme ranges have been given. The length of the head was measured from the apex of the clypeus up to the anterior margin of the collar of the pronotum and the width was taken across the compound eyes including their diameter. Where very large numbers of specimens (e.g. *L. acuta*) were available it could be seen that the measurements of even the exceptional specimens did not lie far outside the ranges obtained by the above method. There is little variation within a species in the size of the parts measured.

The distributions given for each species are based largely on the material seen by the present author, since there has been so much confusion over the identification of the species in the past. In general, published records have been ignored except those given by the authors who originally described the species.

ABBREVIATIONS USED IN TEXT-FIGURES

Ap	apodeme of the basal plate (pivot)	Ls	lateral stapes
At	attaching apodeme of pivot	Or	outer ramus
Atz	attachment of second gonocoxa	P	claspers (parameres)
Bp	basal plate	PaGp1	point of attachment of first gonapophysis
C	conjunctiva	PaR1	point of attachment of the first ramus
Ca	conjunctival membrane	Ph	phallosome (theca)
Cl	clypeus	Pr	process of 9th segment
Cm	connecting apodeme of the aedeagal strut	Ps	pronotal spine
Da	dorsal thecal appendage	Pt	paratergite
Dca	dorsal conjunctival appendage	R	ramus
Dla	dorso-lateral conjunctival appendage	Ra	right lateral conjunctival appendage
Ex	exosoma (theca)	Rb	rib of 9th segment
F	fold of the 9th segment	S	stapes
Fa	front conjunctival appendage	Sa	supporting appendage
Fs	femoral spine	Sl	spine-like appendage
G	genae	Sl2	second spine-like appendage
Gg	gonangulum	St	sternum
Gp	gonapophysis	Ta	terminal appendage
Gp2	second gonapophysis	Ts	"T" structure
Gx	gonocoxa	Tw	tubular way to genital chamber
Ivs	intervalvular sacs	V	vesica
Ju	paraclypeae (jugum)	Va	ventral thecal appendage
La	left lateral conjunctival appendage		

ALYDIDAE Amyot et Serville

Alydides Amyot et Serville, 1843 : 221

Alydidae Dallas, 1852 : 467 ; Douglas and Scott, 1865 : 18

Alydida Stål, 1868 : 542

Alydina Stål, 1873 : 34, 84

Alydinae Distant, 1880 : 156

Alydidae Reuter, 1912 : 49

Coriscidae Stichel, 1925 : 45 ; Blatchley, 1926 : 256

Alydidae Southwood, 1955a : 80 ; Leston and Scudder, 1956 : 231 ; Leston, 1958 : 911 ;

Southwood and Leston, 1959 : 65 ; Scudder, 1959 : 418

Alydinae China and Miller, 1959 : 7, 40

Alydidae Wagner, 1961 : 141

Macropterous or at least brachypterous species, body length usually more than 10 mm. ; head proportionally much larger ; the part between the eyes wider than base of scutellum ; eyes usually very prominent ; ocelli usually large, usually narrowly separated ; apical segment of antennae as long as or usually longer than third ; bucculae short, not extending posteriorly beyond the insertion of antennae, sometimes entirely anterior to antenniferous tubercles ; metapleural scent gland ostioles usually distinct ; spiracles ventral in normal position, away from lateral margins ; fourth and fifth dorsal abdominal segments with basal margins lobately sinuate into preceding segments ; legs long, posterior femora usually thickened, in ♂ sometimes with spines ; first joint of tarsi usually more than twice as long as second and third together ; usually narrow, elongate or cylindrical, dark coloured species.

♂ genitalia usually very complicated and variable ; in ♀, second gonocoxae fused with each other and with second gonopophyses ; complicated sclerotized expansions present, supporting the genital chamber (Scudder, 1959). In eggs, pseudo-operculum absent (Southwood, 1956) ; usually four-lobed principal salivary glands present and accessory ducts with swelling midway along its length (Bugnion, 1910 and Southwood, 1955a) ; in larvae, tergum five usually medially with anterior and posterior margins deflected posteriorly and head pointed anteriorly, longer than broad (Leston and Scudder, 1956) ; chromosome number, $2x = 13$ (x0) (Leston, 1958).

Alydidae can easily be separated from other related families by the presence of very short bucculae, not extending posteriorly beyond the insertion of antennae.

KEY TO SUBFAMILIES

- 1 Pronotum at widest point only slightly wider and longer than head. (Aedeagus usually without ventral pair of thecal appendages) 2
- Pronotum at widest point usually at least half as wide again as and distinctly longer than head. (Aedeagus always with a ventral pair of thecal appendages and usually very complex with a number of lateral, frontal and dorsal conjunctival appendages. In ♀, second gonopophyses usually rounded at apices ; spermatheca usually flask-shaped, sometimes with a median flange) **LEPTOCORISINAE**
- 2 Second rostral segment usually distinctly longer than posterior two together ; fourth rostral segment about twice as long as third ; hind femora never with spines. (In ♂, pygophore with a median posterior spine and aedeagus with a dorsal pair of thecal appendages. In ♀, posterior margin of seventh abdominal sternum usually with a median split ; both pairs of rami fully developed ; spermatheca with a long coiled tube) **MICRELYTRINAE**
- Second rostral segment usually distinctly shorter than posterior two together ; fourth never twice as long as third ; hind femora swollen, always with a series of ventroposterior spines. (In ♂, pygophore without a median posterior spine and aedeagus without thecal appendages. In ♀, posterior margin of seventh abdominal sternum emarginate without a median split, both pairs of rami very short and thin ; spermatheca with a short connecting tube) **ALYDINAE**

LEPTOCORISINAE Stål

Gerrida Stål, 1868 : 543

Gerrina Stål, 1870 : 217

Leptocorisaria Stål, 1872 : 54, 1873 : 85 ; Uhler, 1886 : 13

Leptocorisidae Lethierry and Severin, 1894 : 102

Myodochinae Kirkaldy, 1902 : 306

Leptocorisaria Stål ; Distant, 1902 : 409 ; Oshanin, 1906 : 24

Leptocorixaria Bergroth, 1913 : 159

Leptocorisini Blatchley, 1926 : 257, 259

Leptocorisinae Tillyard, 1926 : 148

Head elongated ; epicranial suture (ecdysal cleavage line) usually present ; occipital suture usually complete ; ocelli minute to large, usually centrally placed behind the compound eyes. First rostral segment extending well beyond the compound eyes ; second rostral segment usually distinctly shorter than posterior two together, fourth usually almost equal to third. Pronotum at widest point usually at least half as wide again as and distinctly longer than head. Posterior angle of metasternum acutely produced. Posterior margin of second dorsal segment of abdomen truncate. Hamus (hook vein) of hind wing and vena decurrens not at all or little distant from base. Legs slender ; hind femora always without spines.

♂ genitalia, especially the aedeagus, highly specialized with a long coiled vesica and usually with a number of lateral, frontal and dorsal conjunctival appendages ; dorsal and ventral pairs of thecal appendages usually present (Text-fig. 1).

♀ genitalia highly specialized ; apices of second gonopophyses rounded ; gonangulum distinctly marked, with the first inner ramus attached ventrolaterally connecting first gonopophys with it, outer ramus of gonopophys usually marked ; second gonocoxae elongated, always with a long, curved and very distinct second ramus connecting second gonopophys with it ; spermatheca usually balloon-shaped, with a coiled tube, sometimes with a median flange.

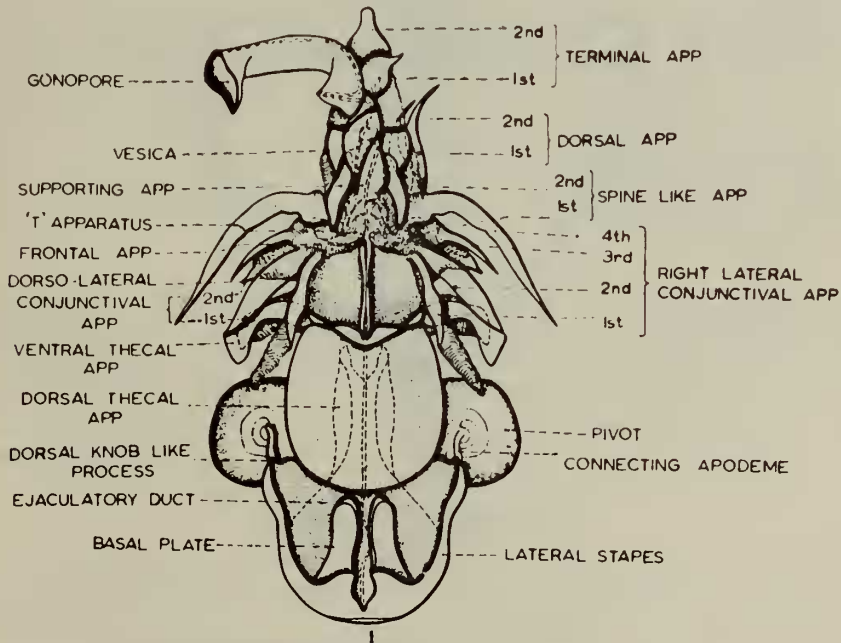
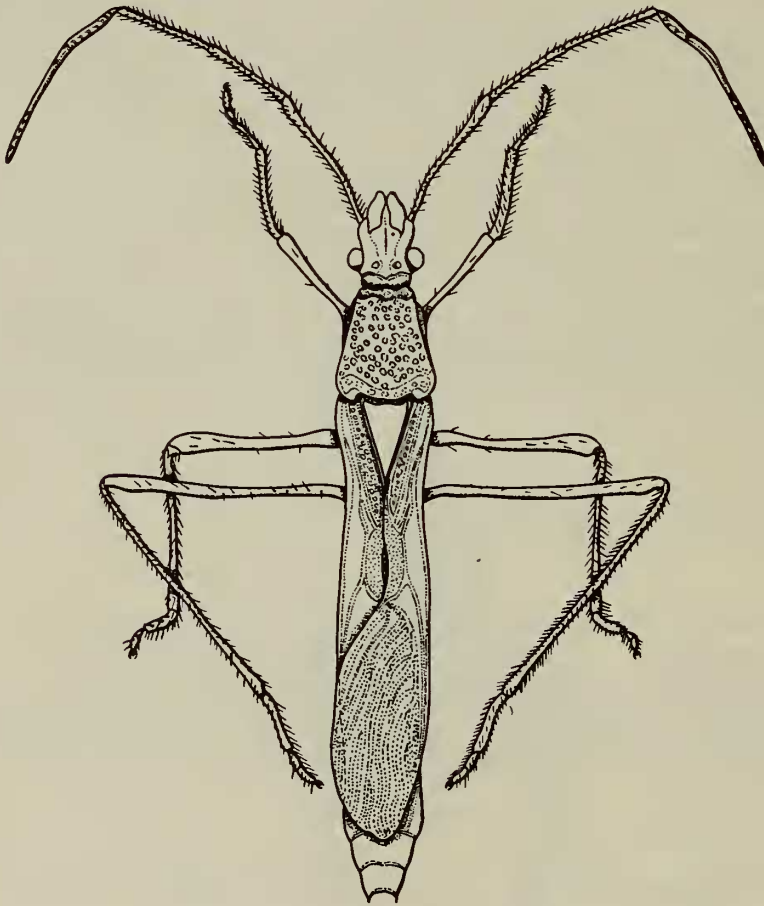


FIG. 1. Hypothetical ♂ aedeagus, fully everted.

This subfamily can be distinguished from *Micrellytrinae* by the length of second and fourth rostral segments. In the latter, the second rostral segment is usually distinctly longer than posterior two together and the fourth is always at least twice as long as the third. In *Alydinae* the hind femur is always armed whereas in this subfamily it is always without spines. Other distinctive characters are given under "Key to the subfamilies".



0.5 mm.

2

FIG. 2. *Stenocoris (Oryzocoris) filiformis*, ♀, dorsal view.

KEY TO GENERA

- 1 Paraclypeae produced and meeting in front of clypeus (Text-fig. 3), dorsal surface of pronotum more or less flat (Leptocorisini trib. n.) 2
- Paraclypeae shorter than clypeus and never enclosing its apex (Text-fig. 5) ; dorsal surface of pronotum usually convex and sloping down towards head (Text-figs. 4, 6 and 7) (Noliphini trib. n.) 5
- 2 First antennal segment swollen throughout (Text-fig. 3), slender only at base ; in lateral view wider beyond middle. (In ♂, posterior margin of seventh abdominal tergum roundly produced in middle ; in ♀, posterior margin of seventh abdominal sternum with a median fold splitting it into two lobes) *MUTUSCA* (p. 110)
- First antennal segment only swollen at apices ; in lateral view not wider beyond middle 3
- 3 Genae inflexed, greatly produced in front of clypeus (Text-fig. 8). (In ♂, posterior margin of seventh abdominal tergum medially produced with a truncated apex, lobes of ninth segment greatly developed, usually produced like horn ; in ♀, posterior margin of seventh abdominal sternum usually conically produced in middle, sometimes with a short median split *BLOETECORIS* (p. 115)
- Genae normal 4
- 4 Claspers made up of two components, always crossed behind ; in ♀, posterior margin of seventh abdominal sternum never distinctly medially produced, never with a median fold, bilobed or with a median split ; spermatheca always with a median flange ; genus only represented in Oriento-Australian regions. *LEPTOCORISA* (p. 69)
- Claspers never made up of two components, never crossed behind ; in ♀, posterior margin of seventh abdominal sternum either medially produced, with a median fold, bilobed or with a median split ; genus represented in Ethiopian, Nearctic and Neotropical regions *STENOCORIS* (p. 9)
- 5 Lateral angles of pronotum posteriorly armed with spines (Text-fig. 6). In ♂, pygophore normally more than half retracted within seventh ; in ♀, posterior margin of seventh abdominal sternum with a median fold *NOLIPHUS* (p. 131)
- Lateral angles of pronotum posteriorly without spines 6
- 6 Anterior femora on under surface below apex with a distinct spine (Text-fig. 9) ; ocelli very closely placed, almost touching each other ; disc of pronotum always black (Text-fig. 4) ; found in Oriento-Australian regions *COSMOLEPTUS* (p. 126)
- Anterior femora without a spine, ocelli not at all touching each other ; disc of pronotum of pale colour (Text-fig. 7) ; found in Neotropical region *LYRNESSUS* (p. 123)

LEPTOCORISINI trib. n.

Body linear. Head always longer than broad ; paraclypeae very well developed, always distinctly longer than and enclosing clypeus ; head behind the eyes not markedly narrower. Pronotum never broader than long, almost rectangular and flat. Aedeagus usually complicated. Spermatheca usually flask-shaped, never conical, sometimes with a median flange.

This tribe is distinguished from Noliphini by the characters of the anterior region of the head and pronotum.

***STENOCORIS* Burmeister.**

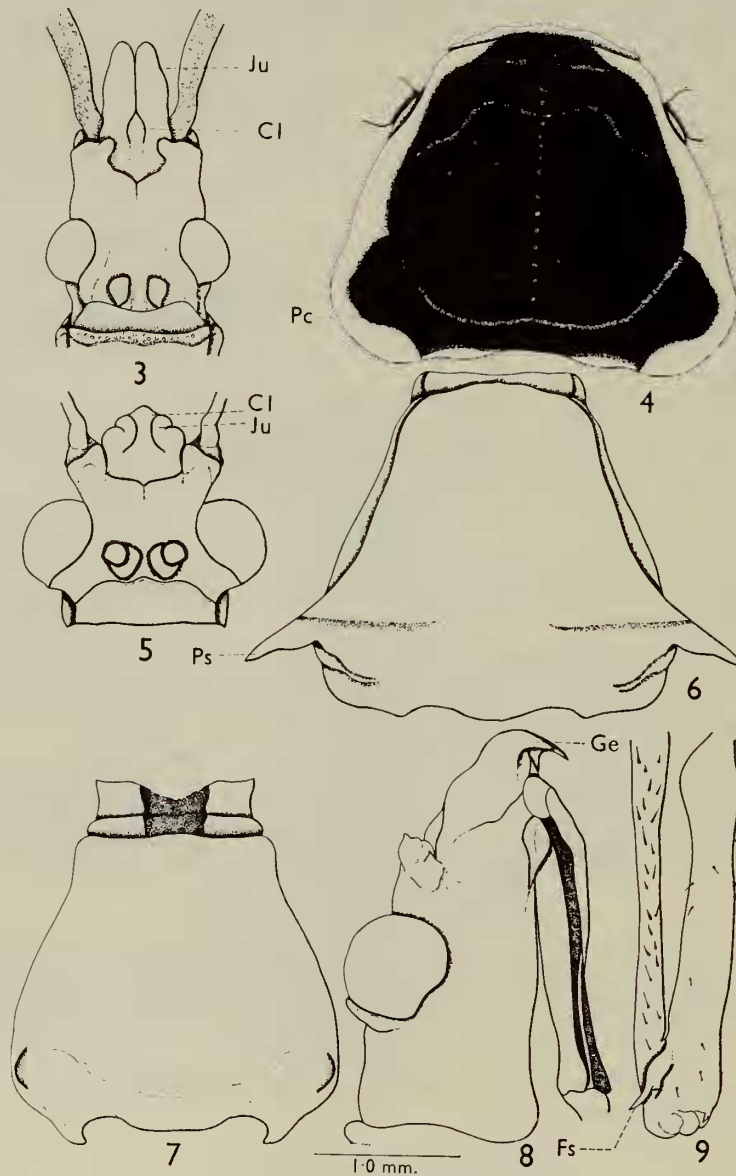
Myodocha Latreille, 1810 ; Burmeister, 1835 : 325

Stenocoris Burmeister, 1839 : 1010 ; Stål, 1873 : 87 [subgenus] ; Blöte, 1937 : 289 [subgenus] ; Villiers, 1955 : 1142 [subgenus] ; Villiers, 1963 : 232 [subgenus]

Type-species : *Cimex tipuloides* Degeer.

Body linear or comparatively robust. Head elongated. Antennae with apices of basal segments slightly swollen. Rostrum usually short, reaching second coxae.

In ♂, posterior margin of seventh abdominal tergum usually truncate; pygophore usually



FIGS. 3-9. 3, *Mutusca proluxa*, head, dorsal view; 4, *Cosmoleptus limbaticollis*, pronotum, dorsal view; 5, *Noliplus erythrocephalus*, head, dorsal view; 6, *Noliplus erythrocephalus*, pronotum, dorsal view; 7, *Lyrnessus geniculatus*, pronotum, dorsal view; 8, *Bloeteocoris inflexigena*, head, lateral view; 9, *Cosmoleptus limbaticollis*, portion of femur and tibia, inner view showing ventro-lateral fore femoral spine.

elongated; claspers variable in form and position; aedeagus usually with a ventral pair of thecal appendages; frontal conjunctival appendages usually present, sclerotised; membranous appendage short, usually without a terminal appendage but usually with a pair of dorsal appendages.

In ♀, posterior margin of seventh abdominal sternum either bilobed, medially produced, with a short median split or concave with a median fold; first gonocoxae usually large, and triangular; intervalvular sacs usually absent; spermatheca usually flask-shaped, without a median flange and usually with a long coiled tube.

This genus shows some affinities with all the other genera in the tribe Leptocorisini and indeed to *Lyrnessus* and *Cosmoleptus sumatranus* in Noliphini. It could possibly be polyphyletic or have retained many of the characters of the more generalized ancestral form.

As *Myodocha* Burmeister nec Latreille was an erroneous identification as well as an emendation of *Myodocha* Latreille, it is not necessary that the replacement name *Stenocoris* Burmeister, 1839 should take the same type as that of *Myodocha* Latreille. The latter is *M. serripes* Olivier, 1811 (a Lygaeid) and has been so designated under the Plenary Powers by the International Commission on Zoological Nomenclature (1961, *Bull. zool. Nomencl.*, 18 : 287). *Stenocoris* is not a new name but is in fact a new generic name for the taxon wrongly identified by Burmeister (1835). The type-species of *Stenocoris* is one of the two species cited by Burmeister in 1835, i.e., *varicornis* Fabricius, 1803 and *tipuloides* Degeer, 1773. It has been fixed by Burmeister (1839) as *Cimex tipuloides* Degeer, 1773.

Stenocoris was reduced to subgeneric rank within *Leptocorisia* Latreille, 1829 by Stål. In fact Stål misidentified *Leptocorisia* Laporte nec Latreille for *Leptocorisia* Latreille. The most senior subgenus *Stenocoris* is therefore hereby proposed as the generic name for the taxon. An application with Dr. W. E. China has been made to the International Commission on Zoological Nomenclature for its recognition (1963).

KEY TO SUBGENERA

- 1 Claspers never crossed, when at rest parallel to one another (Text-fig. 19); posterior margin of ♀ seventh abdominal sternum always medially produced (Text-fig. 22), sometimes notched in the middle, never bilobed, concave or with a median split. **ERBULA** (p. 14)
- Claspers crossed (Text-fig. 75); posterior margin of ♀ seventh abdominal sternum either bilobed (Text-fig. 82), concave (Text-fig. 15) or with a short median split (Text-fig. 181) 2
- 2 Claspers curved like an "S", apex thick and truncated (Text-fig. 11); apical segment of antennae with at least basal half pale; posterior margin of ♀ seventh abdominal sternum concave with a median fold **PSEUDOLEPTOCORISA** (p. 12)
- Claspers never curved like an "S", apex always acutely pointed (Text-fig. 76); apical segments of antennae with small pale area at base, never extending to half the length of the segment; posterior margin of ♀ seventh abdominal sternum never concave with a median fold 3
- 3 Posterior angles of pygophore acutely pointed; claspers crossed over pygophore (Text-fig. 178); posterior margin of ♀ seventh abdominal sternum always with a short median split **ORYZOCORIS** (p. 60)
- Posterior angles of pygophore not acutely pointed; claspers crossed in a socket (Text-fig. 75); posterior margin of ♀ seventh abdominal sternum always medially bilobed, never with a split **STENOCORIS** (p. 30)

STENOCORIS (PSEUDOLEPTOCORISA) subgen. n.

Type-species : *Leptocorixa (Rhabdocoris) erratica* Blöte.

Body comparatively robust. Head only a third longer than broad ; paraclypeae long, about two-fifths the length of head, with pointed apices ; ocelli very close together, inter-ocellar distance only slightly less than half the distance between an ocellus and an eye. Antennae with at least basal halves of apical segments pale. Rostrum short, reaching second coxae. Lateral black line strongly represented, extending from base of antenniferous tubercles to posterior of propleuron. Pronotum distinctly sloping down towards head, with latero-posterior tips light brownish black. Abdomen dorsally pale blackish ; abdomen ventrally dull ochraceous. In ♂, posterior margin of seventh abdominal tergum produced, with a slight median notch ; pygophore round ; claspers extending behind pygophore, asymmetrically crossed, "S"-shaped with broad truncated apices ; aedeagus with dorsal and ventral pairs of thecal appendages ; frontal conjunctival appendage absent ; membranous appendage present but supporting and dorsal appendages wanting ; vesica with very small gonophore.

In ♀, posterior margin of seventh abdominal sternum concave with median fold ; first gonocoxae very large with lobe-like apices ; two pairs of intervalvular sacs ; spermatheca flask-shaped, medially thick with long curved neck, and very short tube.

This subgenus is isolated in *Stenocoris* but exhibits the characters of the genus in body shape, in lacking supporting appendages, in the form of membranous appendage of the aedeagus and in having curved "S"-shaped claspers composed of one component and a plain flask-shaped spermatheca without a median flange. However it is close to *Leptocorisa* in having a rounded pygophore, dorsal and ventral pairs of thecal appendages of the aedeagus and in the concave posterior margin of the female seventh abdominal sternum. It differs from both *Leptocorisa* and *Stenocoris* by the absence of frontal conjunctival appendages and in having only two pairs of intervalvular sacs. Pale basal halves of apical segments of antennae, lateral black line extending up to the posterior of propleuron, claspers with thick and truncated apices and the median fold on the posterior margin of the seventh abdominal sternum in the female are unique characters of this subgenus. This subgenus also shows some relations with *Lyrnessus geniculatus* (Guérin) and *Cosmoleptus sumatranus* Blöte of the tribe Noliphini in the characters of the hemielytra and apical antennal segment.

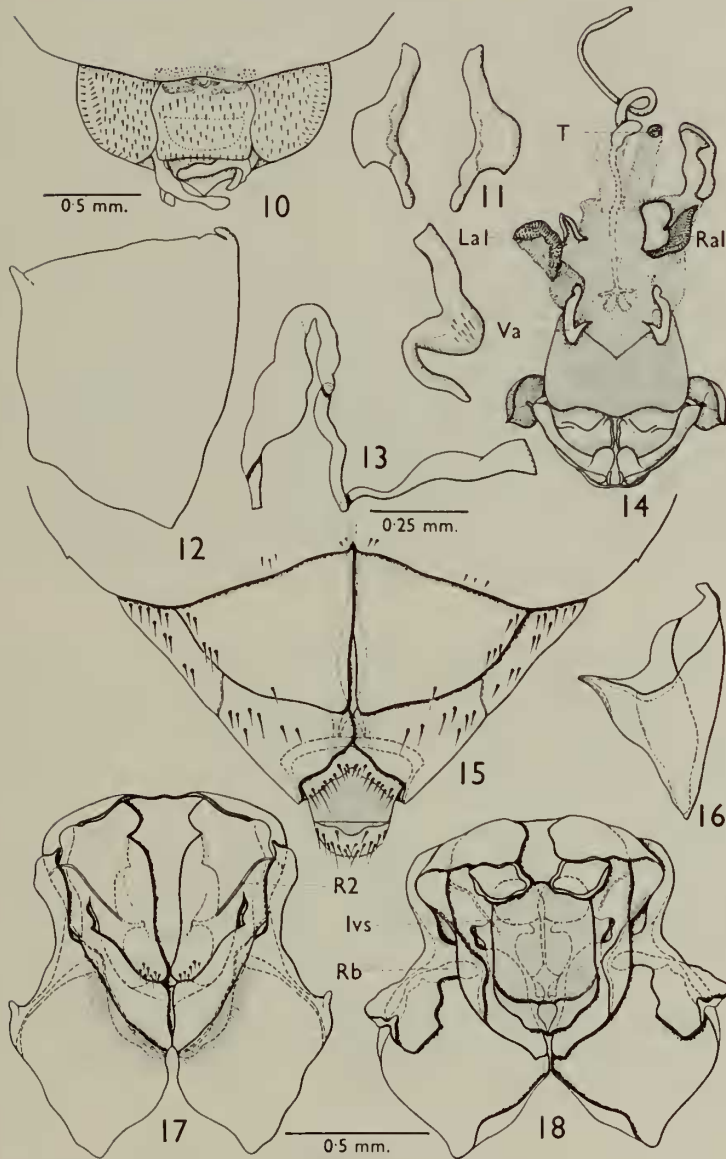
***Stenocoris (Pseudoleptocorisa) erratica* (Blöte) comb. n.**

(Text-figs. 10-18)

Leptocorixa (Rhabdocoris) erratica Blöte, 1937 : 286 ; Villiers, 1955 : 1143, 1963 : 234

Characterized by the pale basal half of the apical segment of antennae, by the round pygophore and by ♂ and ♀ genitalia.

♂. Body length, 13.0-14.0 mm., width, 2.0-2.2 mm. Head length, 1.7-1.8 mm., width, 1.3-1.4 mm., (only paraclypeae, 0.7 mm.) Antennae, segment I, 3.7-4.7 mm., II, 2.1-2.6 mm., III, 2.7-3.2 mm., IV, 4.2-4.9 mm. Rostrum, segment I, 1.2-1.3 mm., II, 1.3-1.4 mm., III, 0.7-0.8 mm., IV, 0.6-0.77 mm. Pronotum, length, 2.2-2.5 mm., width 2.0-2.2 mm. Hind femora, 5.6-6.4 mm. ; hind tibia, 6.1-7.2 mm. Distance between ocelli, 0.4-0.5 mm., distance between an ocellus and an eye, 0.66-0.7 mm.



FIGS. 10-18. *Stenocoris (Pseudoleptocoris) erratica*. 10, ♂ terminalia, dorsal view; 11, ♂ claspers, outer and inner views; 12, ♀, first gonocoxae, ventral view; 13, spermatheca; 14, ♂ aedeagus (inflated), ventral view; 15, ♀ terminalia, ventral view; 16, ♀, first gonopophysis, ventral view; 17, ovipositor, ventral view; 18, same, dorsal view.

Body comparatively robust, pale tinged black. Head only a third longer than broad with a pair of brownish black spots behind ocelli; occipital suture medially concave; paraclypeae thicker in middle and pointed at apices. Antennae dark brownish black with underside of first, articulations between first and second, second and third and about basal half of fourth pale. Rostrum short, hardly reaching second coxae. Lateral black line extending from antenniferous tubercles on to posterior of propleuron. Pronotal disc pale, posteriorly tinged black with two smooth black spots anteriorly on either side, black spots on latero-posterior tips absent. Legs pale with apices of femora, tibiae and tarsi tinged black. Hemelytra tinged brownish black with prominently pale veins. Posterior margin of seventh abdominal tergum slightly produced in middle; pygophore round, posterior margin medially acutely produced (Text-fig. 10).

♂ GENITALIA: Claspers extending behind pygophore, strongly curved in middle, more or less "S"-shaped, blunt at apices; both dorsal and ventral pairs of thecal appendages present, ventral, sac-like, 2 pairs of asymmetrical spiculed lateral appendages; membranous appendage short with a small round terminal appendage; frontal, dorsal and supporting conjunctival appendages wanting; vesica with a minute gonopore (Text-fig. 14).

♀ very similar to ♂ in colour, general appearance and measurement. Posterior margin of seventh abdominal sternum concave in middle with a small median fold (Text-fig. 15).

♀ GENITALIA: First gonocoxae almost conical when viewed externally, lobe-like at apices; two pairs of intervalvular sacs, anterior round and posterior pair oval, spermatheca flask-shaped, thicker in middle with a very short tube (Text-fig. 13).

Type material. Holotype ♀, UGANDA: Southern Toro, Mbarara, Fort Portal Road, 3,888-4,200 ft., 22-24.x. (*S. A. Neave*), B.M.(N.H.); allotype ♀ and paratypes, 4♂, 5♀, data as holotype, B.M.(N.H.); Tero Forest, 2♂, 2♀, vii.1912 (*C. C. Gowdey*), B.M.(N.H.).

Other material. UGANDA: 10♂, 13♀; CONGO: 26♀, 19♀; CAMEROONS: 16♂, 16♀.

This species seems to be very common in Congo and its range extends into Uganda in the east and Cameroons in the west. The adults have been collected in every month of the year except January, August and September.

This species is isolated in the genus *Stenocoris* with the characters of blunt "S"-shaped claspers, rounded pygophore, concave posterior margin of ♀ seventh abdominal sternum and pale basal half of apical antennal segment.

Blöte described this species under the subgenus *Rhabdocoris* Kolenati of *Leptocorixa* Berthold. During the present study *Rhabdocoris* is synonymized with *Leptocorixa* and the latter has been separated from other subgenera with Oriento-Australian species, previously considered under the subgenus *Rhabdocoris*. This species, being different from *Leptocorixa* in generic characters, is placed under the monotypic subgenus *Pseudoleptocorixa* as described here.

***STENOCORIS (ERBULA)* Stål.**

Erbula Stål, 1873: 86; Blöte, 1937: 282; Villiers, 1955: 1141, 1963: 229

Type-species: *Stenocoris (Erbula) southwoodi* sp. n.

Body comparatively short. Head usually only slightly longer than broad; paraclypeae short and rounded at apices; ocelli close together but distance between an ocellus and an eye about half again as long as interocellar distance. Antennae with apical segment pale only at

base ; second usually distinctly shorter than third. Rostrum short, never extending beyond second coxae. Lateral black line usually present but never extending beyond middle of propleuron. Pronotum slightly sloping down towards head with latero-posterior tips usually black. Abdomen usually pale dorsally, ventrally usually dull ochraceous.

In ♂, posterior margin of seventh abdominal tergum truncated ; pygophore usually rounded ; claspers short, curved medially with apices acutely pointed, never crossed ; aedeagus with dorsal and ventral pairs of thecal appendages ; dorsal pair united ; single frontal conjunctival appendage bifurcated at apices ; membranous appendage comparatively long with single dorsal appendage, terminal appendage wanting.

In ♀, posterior margin of seventh abdominal sternum medially produced, usually with a median notch ; first gonocoxae elongated ; intervalvular sacs absent ; spermatheca elongated with short tube coiling round neck.

Males of *Erbula* can be distinguished from those of other subgenera by examining the claspers which are never crossed and the females in having the posterior margin of the seventh abdominal sternum with a median process which is sometimes notched in the middle, but never indented, concave, or with a short median split and in having the spermatheca with a short tube coiled round its neck.

Mis-identification of *Stenocoris (Erbula) southwoodi* sp. n. for *Stenocoris apicalis* (Westwood, 1842), the type of the subgenus and the request for its recognition are the subjects of an application to the International Commission on Zoological Nomenclature (Ahmad, in press).

KEY TO SPECIES

- | | | |
|---|---|-----------------------------|
| 1 | Lateral black line very faintly represented, usually in the form of a black dot on the lateral side of collar ; pygophore elongated ; in ♀, posterior margin of seventh abdominal sternum with a central median round projection, which has a distinct median notch | <i>similis</i> (p. 23) |
| – | Lateral black line usually strongly represented, extending at least on to collar ; pygophore usually rounded ; in ♀, posterior margin of seventh abdominal sternum either triangular, rounded or parallel-sided, if rounded never with a distinct notch | 2 |
| 2 | Claspers short, nearly reaching apex of pygophore ; in ♀, median projection of seventh abdominal sternum round, faintly striated (Text-fig. 59) | <i>southwoodi</i> (p. 24) |
| – | Claspers long, always reaching apex of pygophore ; in ♀, median projection of seventh abdominal sternum parallel-sided or triangular | 3 |
| 3 | Apex of pygophore pointed ; lateral black line never extending forward on to genae ; rostrum usually short, reaching second coxae | 4 |
| – | Apex of pygophore medially notched ; lateral black line usually extending forward on to genae ; rostrum usually extending at least slightly beyond second coxae | 5 |
| 4 | Claspers broad in middle and knob-like at apices (Text-fig. 19) ; in ♀, median projection of seventh abdominal sternum parallel-sided, with a distinct median notch (Text-fig. 22) | <i>annulicornis</i> (p. 16) |
| – | Claspers narrow in middle and acutely pointed at apices (Text-figs. 29 and 30) ; in ♀, median projection of seventh abdominal sternum triangular (Text-fig. 31) | <i>distinguenda</i> (p. 18) |
| 5 | Claspers strongly outwardly curved (Text-figs. 37 and 38) ; in ♀, median projection of seventh abdominal sternum triangularly produced, with round apex (Text-fig. 41) | <i>elegans</i> (p. 20) |
| – | Claspers only curved in middle (Text-figs. 65 and 66) ; in ♀, median projection of seventh abdominal sternum rectangular (Text-fig. 70) | <i>stali</i> (p. 28) |

Stenocoris (Erbula) annulicornis (Signoret) **comb. n.**

(Text-figs. 19-27)

Leptocoris annulicornis Signoret, 1860 : 941*Leptocorixa (Stenocoris) annulicornis* (Signoret) Blöte, 1937 : 289*Leptocorixa (Erbula) annulicornis* (Signoret); Villiers, 1963 : 230

Characterized by the claspers which are broad towards the base and knob-like at apices, by the parallel-sided median projection of the ♀ seventh abdominal sternum, with a distinct notch and by the form of ♂ and ♀ genitalia.

♂. Body length, 12.0-12.5 mm., width, 1.6-1.8 mm. Head length, 1.5-1.6 mm., width, 1.2-1.3 mm. Antennae, segment I, 3.0-3.3 mm., II, 1.7-2.0 mm., III, 2.0-2.3 mm., IV, 3.8-4.0 mm. Rostrum, segment I, 1.1-1.2 mm., II, 1.2-1.3 mm., III, 0.65-0.7 mm., IV, 0.6-0.7 mm. Pronotum, length, 1.9-2.0 mm., width, 1.6-1.8 mm. Hind femora, 4.8-5.0 mm. Hind tibia, 5.1-5.3 mm. Distance between ocelli, 0.4 mm., distance between an ocellus and an eye, 0.6 mm.

Body comparatively short, slim, tinged with brown. Head pale with area between the eyes and behind occipital suture brownish black; occipital suture medially concave with sides convex; paraclypeae short, thicker in middle and thinner at apices. Antennae brownish black, with underside of basal segment, median portion of second, articulation between first and second and that between second and third and basal portion of apical segment pale. Rostrum short, usually reaching base of second coxae. Lateral black line well represented on sides of antenniferous tubercles and extending to anterior of propleuron. Pronotal disc with brownish black punctures and black spots on posterior angles. Legs sometimes tinged with green. Hemelytra tinged with black. Abdomen with dorsum pale, tinged with brown, venter pale ochraceous, sometimes reddish anteriorly. Posterior margin of seventh abdominal tergum regularly curved, pygophore rounded with apex pointed.

♂ GENITALIA: Claspers broad towards base, external surface curved only in middle (Text-figs. 19 and 20); ventral thecal appendage as in Text-fig. 21; four left lateral conjunctival appendages as in Text-fig. 21; frontal appendage bifurcated in middle, sometimes left branch longer; four right lateral conjunctival appendages as in Text-fig. 21 with spine-like appendage, thicker at base and apex; dorsal appendage thick and curved at base as in Text-fig. 21.

♀. Body length, 13.0-14.0 mm., width, 2.0-2.2 mm. Head length, 1.6-1.73 mm., width, 1.3-1.35 mm. Antennae, segment I, 3.0-3.1 mm., II, 1.8-1.9 mm., III, 2.0-2.2 mm., IV, 3.8-4.0 mm. Rostrum, segment I, 1.33 mm., II, 1.33 mm., III, 0.7 mm., IV, 0.7 mm. Pronotum, length, 2.25-2.35 mm., width 2.0-2.13 mm. Hind femora, 5.3-5.6 mm.; hind tibia, 5.8-6.0 mm.; distance between ocelli 0.46 mm., distance between an ocellus and an eye, 0.7 mm.

Very similar in general appearance and colour but distinctly longer than ♂; seventh abdominal sternum with small median parallel-sided notched projection.

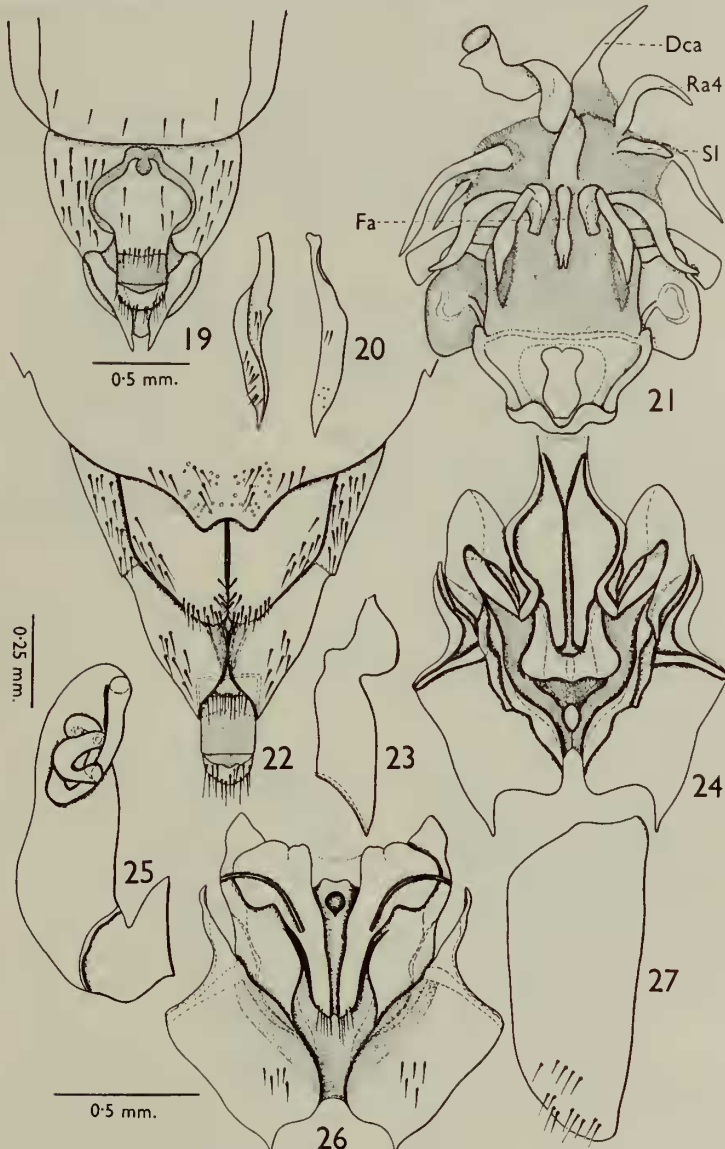
♀ GENITALIA: First gonocoxae thicker in middle and curved near apex with round apices; intervalvular sacs absent, spermatheca flask-shaped with long neck (Text-fig. 25).

Material studied. MAURITIUS: 1 ♂, 2 ♀; SEYCHELLES: 1 ♀; MADAGASCAR: 1 ♀; CONGO: 18 ♂, 11 ♀.

The range of this species extends in the west as far as the Congo (Ituri river) and in the east to Mauritius. It is also found in the Seychelles and Madagascar. It has mostly been collected during the early part of the year (from December until June), but it has also been taken in August.

This species is close to *distinguenda* (Blöte) in having similar type of paraclypeae, lateral black line and the similar shape of the pygophore, but can easily be separated

by examining the ♂ claspers, which are broad towards the bases and knob-like at apices in this species, whereas they are uniformly thin and acutely pointed in *distinguenda*. The small parallel-sided, medially notched projection of the ♀ seventh abdominal sternum separates it from all the species of this subgenus.



FIGS. 19-27. *Stenocoris (Erbula) annulicornis*. 19-21, ♂, 22-27, ♀. 19, terminalia, dorsal view; 20, claspers, inner and outer views; 21 aedeagus (inflated), ventral view; 22, terminalia, ventral view; 23, first gonopophysis, ventral view; 24, ovipositor, dorsal view; 25, spermatheca; 26, ovipositor, ventral view; 27, first gonocoxa, ventral view.

Stål (1873) synonymized this species with *L. (E.) apicalis* Westwood but in 1937 Blöte redescribed it from Mauritius and Seychelles, placing it in the subgenus *Stenocoris*. Signoret's type material is in the Naturhistorisches Museum, Vienna, but Prof. Max Beier informed the author that it was on loan to Dr. A. Villiers and thus it was not possible to examine it. However, Dr. Villiers (personal communication) has selected a lectotype and has published figures of the terminalia (♂, ♀). These agree with the concept of *annulicornis* in this study. Villiers has pointed out that *annulicornis* of Blöte was not the true *annulicornis* Signoret but another species, which he described as *Leptocorixa blotei*; however the ♂ of this species is clearly *S. phthisica* (Gerstäcker) (see page 70), but the ♀ represents the true *annulicornis* and Villiers' figures of the seventh abdominal sternum of the ♀ of *blotei* and *annulicornis* are almost identical.

***Stenocoris (Erbula) distinguenda* (Blöte) comb. n.**

(Text-figs. 28–36)

Leptocorixa (Erbula) distinguenda Blöte, 1937 : 286 ; Villiers, 1955 : 1142 [as synonym of *L. elegans*]

Characterized by the uniformly thin and smoothly tapering claspers, by the triangular median projection of the ♀ seventh abdominal sternum and by the form of ♂ and ♀ genitalia.

♂. Body length, 12.0–12.5 mm., width, 1.7–1.8 mm. Head length, 1.6–1.7 mm., width, 1.15–1.25 mm. Antennae, segment I, 2.9–3.0 mm., II, 1.7–1.75 mm., III, 1.9–2.1 mm., IV, 4.0–4.2 mm. Rostrum, segment I, 1.1–1.3 mm., II, 1.2–1.3 mm., III, 0.6–0.7 mm., IV, 0.6–0.65 mm. Pronotum, length, 2.0–2.1 mm., width, 1.7–1.8 mm. Hind femora, 4.7–4.9 mm.; hind tibia, 5.2–5.5 mm. Distance between ocelli, 0.4–0.43 mm., distance between an ocellus and an eye, 0.6–0.65 mm.

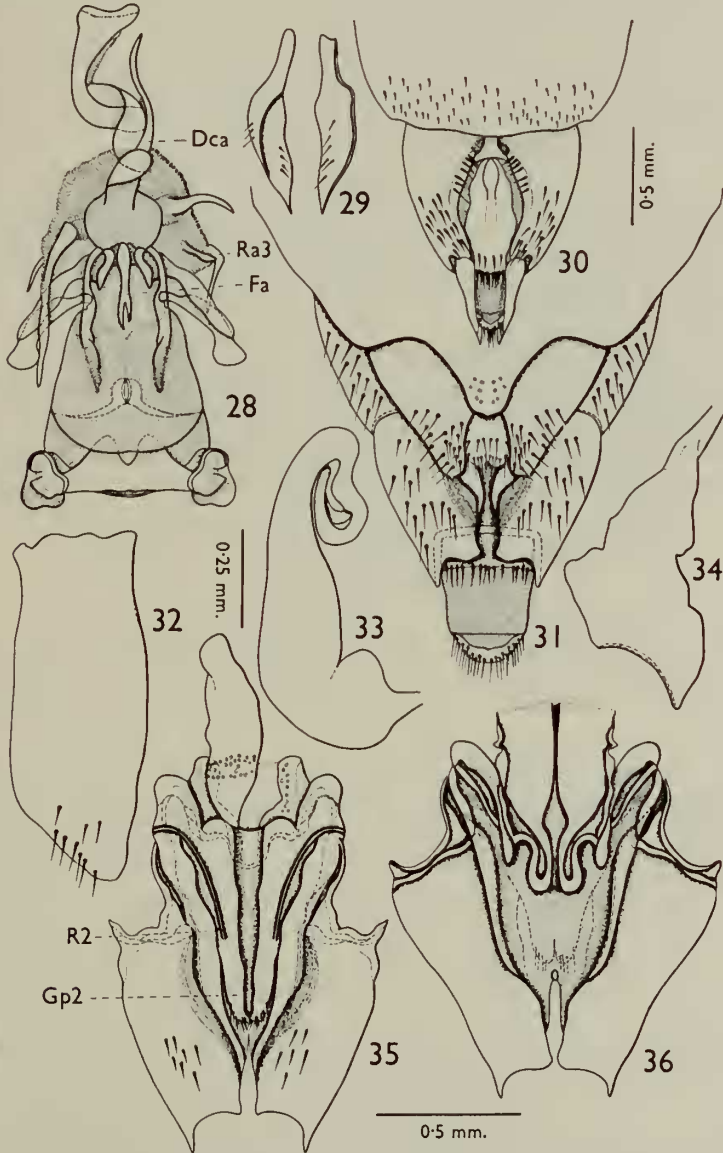
Body usually comparatively very short, pale, tinged with brownish black; occipital suture concave in middle with lateral arms curving outwards towards sides of head; paraclypeae short, thicker in middle, thinner and curved near apices. Antennae pale, with brownish black tinge, underside of basal segment, basal half of second, articulations of second and third and basal portion of apical segment pale. Rostrum short, approaching second coxae. Lateral black line well represented from sides of antenniferous tubercles to anterior of propleuron. Pronotal disc with brownish black punctures, posterior angles with black spots. Legs pale unicolourous, sometimes with apices of femora and bases of tibiae tinged with brown. Hemelytra with black punctures. Abdomen with dorsum except sides of connexiva yellowish red, venter pale ochraceous. Posterior margin of seventh abdominal tergum truncated, slightly convex in middle; pygophore with pointed apex.

♂ GENITALIA : Claspers long, uniformly thin and distinctly reaching apex of pygophore, straight at apex; ventral thecal appendages as in Text-fig. 28; four lateral conjunctival appendages as in Text-fig. 28; frontal appendage long, thinner in middle and bifid at apex with almost equal branches, four right lateral conjunctival appendages as in Text-fig. 28 with spine-like appendage thin in middle, apex blunt; dorsal appendage convex at base, extending concavely towards apex.

♀. Body length, 14.5–15.6 mm., width, 2.0–2.1 mm. Head length, 1.65–2.0 mm., width, 1.3–1.4 mm. Antennae, segment I, 3.0–3.4 mm., II, 1.8–2.0 mm., III, 2.03–2.2 mm., IV, 4.0–4.3 mm. Rostrum, segment I, 1.3–1.33 mm., II, 1.3–1.33 mm., III, 0.7–0.8 mm., IV, 0.6–0.7 mm. Pronotum, length, 2.3–2.5 mm., width, 2.0–2.1 mm. Hind femora, 5.0–5.6 mm.

Hind tibia, 5.5-5.6 mm. Distance between ocelli, 0.4-0.5 mm., distance between an ocellus and an eye, 0.6-0.7 mm.

Very similar to ♂ in general appearance and colour, but distinctly longer and slightly darker ; posterior margin of seventh abdominal sternum with triangular median projection following deep curve on either side.



FIGS. 28-36. *Stenocoris (Erbula) distinguenda*. 28-30, ♂, 31-36, ♀. 28, aedeagus (inflated), ventral view ; 29, claspers, outer and inner views ; 30, terminalia, dorsal view ; 31, same, ventral view ; 32, first gonocoxa, ventral view ; 33, spermatheca ; 34, first gonopophysis, ventral view ; 35, ovipositor, ventral view ; 36, same, dorsal view.

♀ GENITALIA : First gonocoxae very narrow and curved at apices, outer margin regular ; intervalvular sacs absent ; spermatheca flask-shaped, with a short and curved neck as in Text-fig. 33.

Type material. Holotype ♂, NYASALAND (head and hind tibia missing), B.M.(N.H.) ; allotype ♀, with similar locality data (antennae missing), B.M.(N.H.).

Other material. CONGO : 15 ♂, 18 ♀.

This species seems to be represented in the south eastern region as far as Nyasaland. Adults are found in the early part of the year up to late May. No specimens were collected between July and October.

This species is close to *S. (E.) elegans* (Blöte) and *S. (E.) stali* sp. n. on one hand and *S. (E.) annulicornis* (Signoret) on the other. From the former pair it can be separated by the short rostrum, the triangular median projection of the ♀ seventh abdominal sternum and from the latter species by its uniformly thin and acutely pointed claspers.

Villiers doubted the validity of this species and suggested its synonymy with *S. (E.) elegans* (Blöte). He remarked that the shape of the ♀ seventh abdominal sternum was highly variable and this might have led Blöte to describe this species. The form of ♂ and ♀ genitalia clearly demarcates these two species and the shape of the ♀ seventh abdominal sternum has also been found to be fairly constant.

***Stenocoris (Erbula) elegans* (Blöte) comb. n.**

(Text-figs. 37-46)

Leptocorixa (Erbula) elegans Blöte, 1937 : 285 ; Villiers, 1955 : 1142, 1963 : 230

Characterized by the claspers which are regularly curved, by the triangular median projection of ♀ seventh abdominal sternum and by the form of ♂ and ♀ genitalia.

♂. Body length, 12.3-13.5 mm., width, 1.7-2.0 mm. Head length, 1.5-1.85 mm., width, 1.25-1.45 mm. Antennae, segment I, 3.0-3.4 mm., II, 2.0-2.2 mm., III, 2.3-2.6 mm., IV, 4.0-4.3 mm. Rostrum, segment I, 1.25-1.5 mm., II, 1.3-1.5 mm., III, 0.7-0.8 mm., IV, 0.65-0.7 mm. Pronotum, length, 2.0-2.5 mm., width, 1.7-2.0 mm. Hind femora, 5.5-5.9 mm. Hind tibia, 5.8-6.1 mm. Distance between ocelli, 0.4-0.5 mm., distance between an ocellus and an eye, 0.6-0.65 mm.

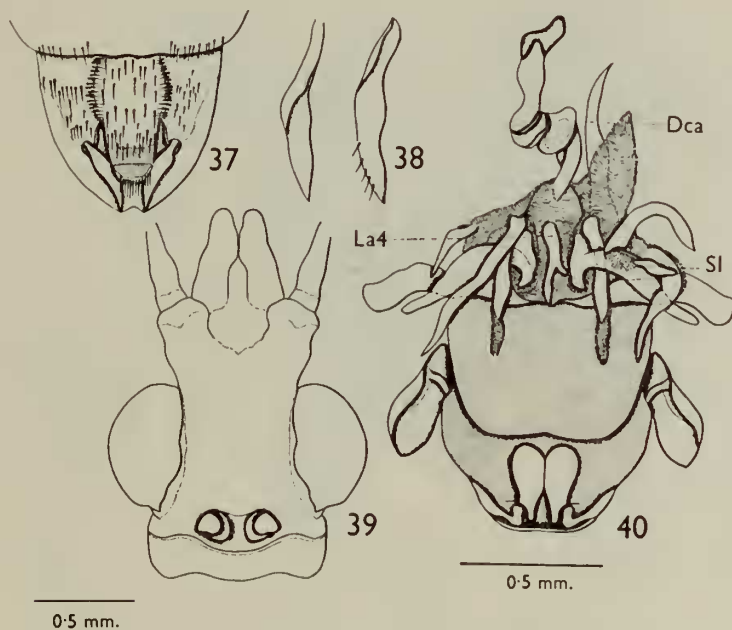
Body short, comparatively slim, pale, with brownish black tinge. Head pale, slightly brownish in middle ; occipital suture "U"-shaped in middle, side convex ; paraclypeae short, thick at bases, thin, rounded and divergent at apices. Antennae brownish black, sometimes with underside of first, middle of second, articulations between first and second and between second and third, and basal portion of apical segment pale. Rostrum usually comparatively long, extending at least slightly beyond second coxae. Lateral black line well represented, usually from genae to middle of propleuron sometimes faint to genae. Pronotal disc tinged brown, posterior angles with black dots. Legs pale, with apices of femora and bases of tibiae light brown, rarely with reddish tinge. Hemielytra with brownish black punctures. Abdomen with dorsum, except margins, red, venter pale ochraceous, sometimes tinged red. Posterior margin of seventh abdominal tergum usually at least slightly convex in middle ; pygophore with posterior margin medially notched.

♂ GENITALIA : Claspers long, reaching apex of pygophore, outer margin regularly curved and apices acutely pointed ; ventral thecal appendages as in Text-fig. 40 ; four left lateral con-

junctival appendages as in Text-fig. 40 ; frontal appendage bifurcated at apex, right branch shorter and thicker near apex ; four right lateral conjunctival appendages as in Text-fig. 40 with spine-like appendage thicker in middle, thinner and pointed at apex ; dorsal appendage thick in middle and curved near base and apex.

♀. Very similar to ♂ in general appearance and measurements, usually longer (13.5–15.0 mm.) with a triangular median projection of ♀ seventh abdominal sternum, this rounded at apex.

♀ GENITALIA : First gonocoxae with outer margin slightly sinuate, curved near apex ; intervalcular sacs absent ; spermatheca flask-shaped with thin and short neck as in Text-fig. 43.



FIGS. 37–40. *Stenocoris (Erbula) elegans*, ♂. 37, terminalia, dorsal view ; 38, claspers, outer and inner views ; 39, head, dorsal view ; 40, aedagus (inflated), ventral view.

Type material. Holotype ♂, SIERRA LEONE : II.X.1912 (*J. J. Simpson*), B.M. (N.H.) ; allotype ♀, data as holotype, B.M.(N.H.) ; paratypes, SIERRA LEONE : Jahama, 3 ♂, 2 ♀ (*J. J. Simpson*), B.M.(N.H.).

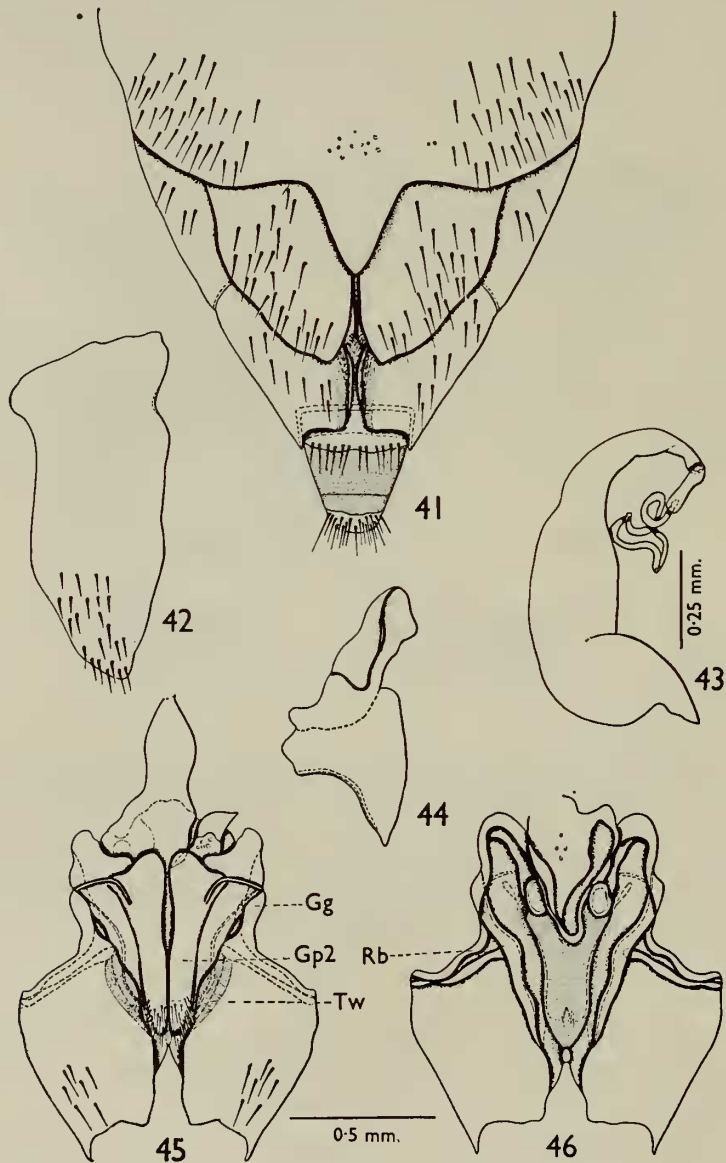
Other material. SENEGAL : 2 ♀, 2 ♀ ; NIGERIA : 5 ♀, 3 ♀ ; CONGO : 25 ♀, 15 ♀ ; TANGANYIKA : 3 ♀, 2 ♀.

1 ♀, 1 ♀ from SUMATRA, in Breddin's collection, labelled "Leptocorisa lepida Breddin det. Kiritshenko" (Dtsch. Entom. Inst. Berlin) were also examined. It is felt that there has been some mistake in the locality data.

The range of this species extends from Senegal in the west to Tanganyika in the east. This species is probably very common and adults have been collected throughout the year.

This species is close to *stali* sp. n. and *distinguenda* (Blöte). In *stali* the lateral

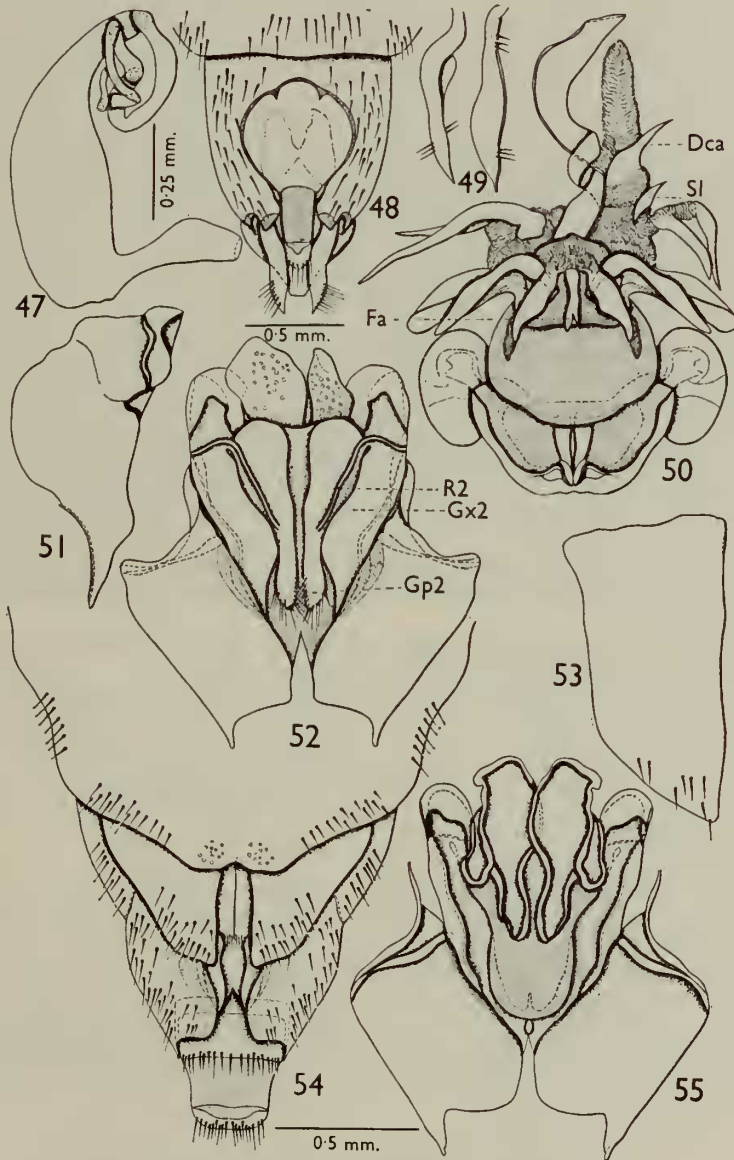
black line is faint, whereas in *distinguenda* (Blöte) the rostrum is short and does not extend beyond the second coxae. Its triangular median projection with the round apex of the ♀ seventh abdominal sternum and the claspers with regularly curved outer margins are its peculiarities.



FIGS. 41-46. *Stenocoris (Erbula) elegans*, ♀. 41, terminalia, ventral view; 42, first gonocoxae, ventral view; 43, spermatheca; 44, first gonopophysis, ventral view; 45, ovipositor, ventral view; 46, same, dorsal view.

Stenocoris (Erbula) similis (Blöte) comb. n.

(Text-figs. 47-55)

Leptocorixa (Erbula) similis Blöte, 1937 : 283

FIGS. 47-55. *Stenocoris (Erbula) similis*. 48-50, ♂, 47, 51-55, ♀. 47, spermatheca; 48, terminalia, dorsal view; 49, claspers, outer and inner views; 50, aedeagus; 51, first gonopophysis, ventral view; 52, ovipositor, ventral view; 53, first gonocoxae, ventral view; 54, terminalia, ventral view; 55, ovipositor, dorsal view.

Characterized by the faint lateral black line, which is usually represented by a lateral black dot on collar and by the form of ♂ and ♀ genitalia.

♂. Body length, 12.5–14.5 mm., width, 2.0–2.1 mm. Head length, 1.9–2.0 mm., width, 1.35–1.5 mm. Antennae, segment I, 3.4–3.5 mm., II, 2.3–2.4 mm., III, 2.5–2.7 mm., IV, 4.4–4.6 mm. Rostrum, segment I, 1.4–1.5 mm., II, 1.4–1.5 mm., III, 0.7–0.9 mm., IV, 0.6–0.7 mm. Pronotum, length, 2.5–2.6 mm., width, 2.0–2.1 mm. Hind femora, 5.4–5.6 mm. Hind tibia, 6.3–7.0 mm. ; distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.7 mm.

Body short, slightly comparatively robust, pale with a blackish tinge. Head with brownish markings ; occipital suture "U"-shaped with arms curved backwards near sides of head ; paraclypeae short, thicker in middle. Antennae with brownish black tinge, apical segment red, pale at base. Rostrum short, approaching posterior limit of second coxae. Lateral black line very faintly represented, usually like a black dot on either side of collar. Pronotal disc with black latero-posterior spots. Legs pale, unicoloured, sometimes with blackish tinge. Hemelytra pale with black punctures on clavus, near membrane, on anal area and on cell. Abdomen pale, tinged red dorsally ; ventrally pale ochraceous. Posterior margin of seventh abdominal tergum truncated ; pygophore elongated, apex narrow and truncated.

♂ GENITALIA : Claspers long, distinctly reaching apex of pygophore, curved outwardly in middle and inwardly at apices ; ventral thecal appendages as in Text-fig. 50 ; four left lateral conjunctival appendages as in Text-fig. 50 ; frontal appendage bifid at apex, branches equal ; four right lateral conjunctival appendages with first spine-like appendage ; dorsal appendage thicker at base, inwardly curved and acutely pointed.

♀. Body length, 13.5–15.5 mm., width, 2.2–2.4 mm. Head length, 2.0–2.1 mm., width, 1.4–1.5 mm. Antennae, segment I, 3.3–3.5 mm., II, 2.1–2.3 mm., III, 2.4–2.6 mm., IV, 4.0–4.5 mm. Rostrum, segment I, 1.4–1.6 mm., II, 1.4–1.5 mm., III, 0.7–0.9 mm., IV, 0.6–0.8 mm. Pronotum, length, 2.7–2.8 mm., width, 2.2–2.4 mm. Hind femora, 5.4–5.6 mm. Hind tibia, 5.9–6.1 mm. Distance between ocelli, 0.5–0.7 mm. ; distance between an ocellus and an eye, 0.6–0.8 mm.

Usually longer than ♂ and slightly darker in colour, seventh abdominal sternum with a rounded median projection, which has a distinct median notch.

♀ GENITALIA : First gonocoxae triangular with rounded apices ; intervalvular sacs absent ; spermatheca thicker at base with a thin long and rounded neck as in Text-fig. 47.

Type material. Holotype ♂, ANGOLA : Quirimbo, v.1934 (*K. Jordan*), B.M. (N.H.) ; paratypes, 15 ♂, 10 ♀, with data as holotype, B.M.(N.H.).

Other material. CONGO : 34 ♂, 15 ♀ ; TANGANYIKA : 1 ♂.

This species is common in the Congo and its range extends south west into Angola. The adults have been collected from February until May and also in December.

This species is closest to *S. (E.) elegans* and *S. (E.) stali* sp. n., but can be separated from them by the character of the lateral black line, which is in this species commonly reduced to a black dot on either side of the collar. The rounded and medially notched median projection of the ♀ seventh abdominal sternum and the elongated pygophore with a truncated posterior margin are its peculiarities.

Stenocoris (Erbula) southwoodi sp. n.

(Text-figs. 56–64)

Leptocorisa apicalis Westwood ; Stål, 1866 : 88, 1873 : 86

Leptocorixa apicalis Westwood ; Blöte, 1937 : 282 ; Villiers, 1955 : 1141, 1963 : 229

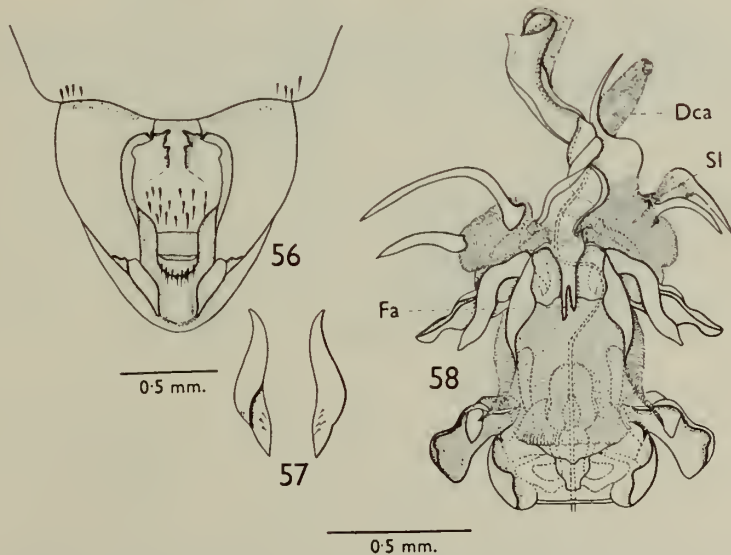
Characterized by very short claspers, which are thick and curved in the middle and do not reach the posterior margin of pygophore, by posterior median round projection of ♀ seventh abdominal sternum and by the form of ♂ and ♀ genitalia.

♂. Body length, 12.2–13.5 mm., width, 1.9–2.1 mm. Head length, 1.7–1.9 mm., width, 1.4–1.5 mm. Antennae, segment I, 3.2–3.6 mm., II, 2.0–2.2 mm., III, 2.4–2.6 mm., IV, 4.4–4.7 mm. Rostrum, segment I, 1.25–1.5 mm., II, 1.4–1.5 mm., III, 0.7–0.9 mm., IV, 0.5–0.7 mm. Pronotum, length 2.2–2.4 mm., width, 1.9–2.1 mm. Hind femora, 5.0–5.5 mm. Hind tibia, 5.5–5.8 mm. Distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.75 mm.

Body short, darker in colour. Head pale with blackish tinge; occipital suture "V"-shaped in middle with arms curving backwards towards side of head; paraclypeae short, slightly thicker in middle. Antennae brownish black, with underside of basal segment, articulations between first and second and between second and third and basal portion of apical segment, pale. Rostrum short, reaching apex of second coxae. Lateral black line extending from genae up to lateral side of collar. Pronotal disc pale with brownish black tinge, posterior angles brownish black. Legs pale, usually tinged black. Hemielytra, except costal margin and membrane, covered with black punctures. Abdomen with dorsum pale tinged red, venter pale ochraceous with reddish tinge anteriorly. Posterior margin of seventh abdominal tergum truncated, only slightly convex in middle; pygophore rounded with a pointed apex.

♂ GENITALIA: Claspers very short, never reaching posterior margin of pygophore, thicker and curved in middle; ventral thecal appendages as in Text-fig. 58, four left lateral conjunctival appendages as in Text-fig. 58, frontal appendage bifurcated from middle, branches equal; four right lateral conjunctival appendages as in Text-fig. 58, with spine-like appendage reduced to a very small bristle-like appendage; dorsal appendage thicker at base and strongly curved.

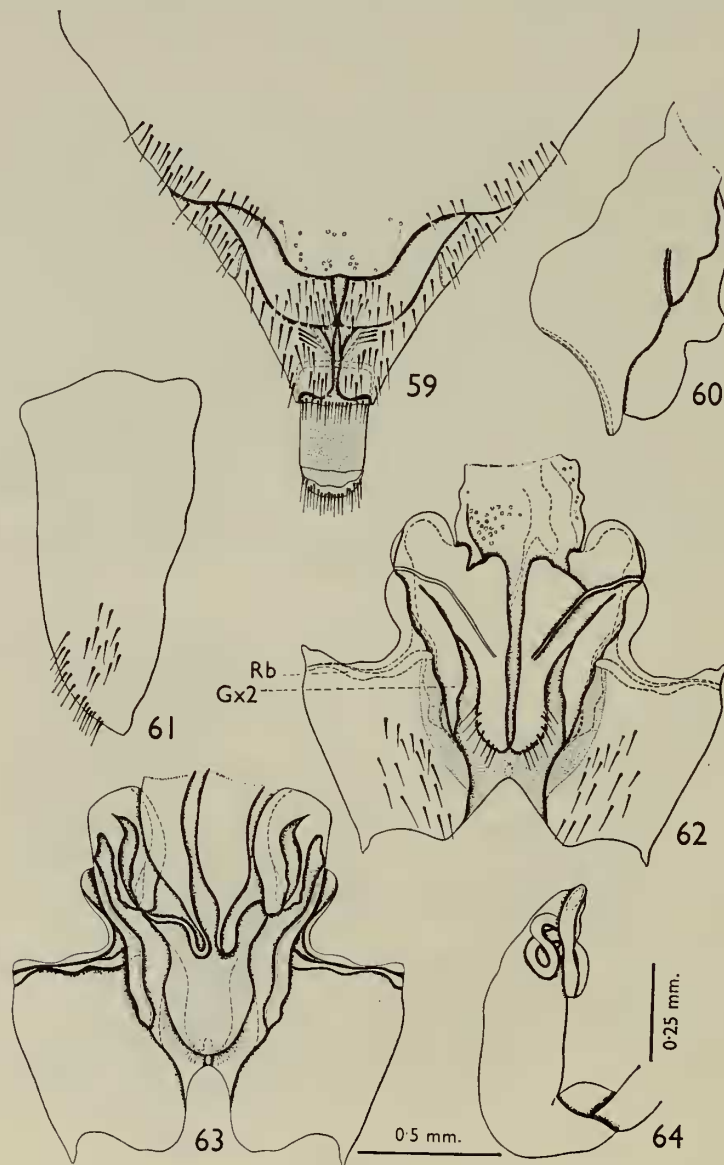
♀. Body length, 13.0–14.5 mm., width, 1.9–2.1 mm. Head length, 1.8–1.95 mm., width, 1.4–1.6 mm. Antennae, segment I, 3.0–3.6 mm., II, 2.0–2.3 mm., III, 2.4–2.6 mm., IV,



FIGS. 56–58. *Stenocoris (Erbula) southwoodi*, ♂. 56, terminalia, dorsal view; 57, claspers, outer and inner views; 58, aedeagus (inflated), ventral view.

4.5-4.7 mm. Rostrum, segment I, 1.4-1.6 mm., II, 1.4-1.6 mm., III, 0.7-0.9 mm., IV, 0.6-0.8 mm. Pronotum, length, 2.3-2.5 mm., width, 1.9-2.1 mm. Hind femora, 5.6-6.0 mm. Hind tibia, 6.0-6.1 mm. Distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.75 mm.

Very similar to ♂ in general appearance, slightly darker and longer; posterior margin of seventh abdominal sternum with a round, median, faintly striated projection.



FIGS. 59-64. *Stenocoris (Eybula) southwoodi*, ♀. 59, terminalia, ventral view; 60, first gonopophysis, ventral view; 61, first gonocoxae, ventral view; 62, ovipositor, ventral view; 63, same, dorsal view; 64, spermatheca.

♀ GENITALIA : First gonocoxae elongated and narrow, apices rounded ; intervalvular sacs absent ; spermatheca ovate without a distinct neck, as in Text-fig. 64.

Holotype ♂, SIERRA LEONE : Sembahun, at light, 14.ii.1924 (*E. Hargreaves*), labelled "*Leptocorixa apicalis* Westwood, det. H. C. Blöte", B.M.(N.H.).

Paratypes. NIGERIA : Sapolar, 1 ♂, 10.v.1955 (*E. A. Duffy*), Lagos, 6 ♂ (*G. Strachan*), B.M.(N.H.) ; S. NIGERIA : 1 ♂, 1912 (*A. D. Peacock*), with label "*Leptocorixa apicalis* Westwood, det. H. C. Blöte", B.M.(N.H.) ; SIERRA LEONE : 1 ♀ (*Afzel*), Stål's collection, Riksmus. Stockholm ; GHANA : Ashanti Dist., 1 ♂, 1 ♀, 7.v.1913 (*A. E. Evans*), B.M.(N.H.) ; PRINCIPE ISLAND : 1 ♀, 1.i.1933 (*W. H. T. Tams*), B.M.(N.H.) ; SÃO THOMÉ ISLAND : 1 ♂, 1919-1921, B.M.(N.H.) ; CONGO : Ituru, 1 ♂ (*Gyld*), Riksmus. Stockholm, various localities, 250 ♂, 345 ♀, iii-vi. viii-xi. (various collectors), Mus. R. Afr. centr. ; SOMALIA : Basso Giula Portrizi, 1 ♀, vii.1934, B.M.(N.H.) ; UGANDA : Kawanda, light trap in coffee plantation, 6-12.i, 4-7.ii, 8-11.xi.1959 (*J. Bowden*), Ahmad collection, Ruwenzori Range, Ibanda, 4,700 ft., 1 ♂, 4-6.vii.1952 (*D. S. Fletcher*), Bwamba Valley, 1 ♂, vii.1945 (*van Someren*), Kampala, Jinja Road, 4,000 ft., Mabira Forest, 3,500-3,800 ft., Chagwe, 1 ♀, 1 ♂, vii.1911 (*S. A. Neave*), Nymgasair Valley, 6,400 ft., between Mitiana and Entebbe, 3,800 ft., Tero Forest, 5 ♂, 5 ♀, ix.1911, 12.iv.1913, 2.vi.1930, xii.1934, i.1935 (various collectors), B.M.(N.H.) ; TANGANYIKA : Ilonga, nr. Kilosa, vii.1962 (*Robertson*), B.M.(N.H.) ; ZANZIBAR : 1 ♀, 1.ii.1925 (*H. J. Shell*), B.M.(N.H.) ; ?SUMATRA : 2 ♂, in series of *Leptocorixa lepida* Breddin, 1909, with label "*L. lepida* det. Kiritshenko" (probably an incorrect locality label), Dtsch. Entom. Inst., Berlin.

This is the most widely distributed species of *Erbula*. Leaving aside the doubtful record from Sumatra, its range extends from São Thomé Island and Principe Island in the west to Zanibar in the east and appears to comprise the whole of the African equatorial belt. The adults are very common in late May and early June, but they have been collected throughout the year.

This species is close to *S. (E.) annulicornis* (Signoret) in general appearance and colour but comparatively isolated and can be easily separated from all other species of the subgenus *Erbula* by having very short, medially thick and curved claspers in the ♂, which never reach the apex of the pygophore. In the ♀, the round median projection of the seventh abdominal sternum separates it from all other species of this group.

An examination of the material that was seen by Stål and Blöte (see above) has shown that Stål misidentified this species as *L. apicalis* Westwood, and Blöte correctly followed Stål's interpretation. However their specimens are not *Stenocorixa apicalis* (Westwood) (see page 38) and thus the present species, which was the type of *Erbula* Stål, is hitherto undescribed. This species has also been recorded by Southwood (1961) in light trap catches at Kawanda, Uganda. I have pleasure in naming this species in honour of Dr. T. R. E. Southwood, who suggested the present problem and has supervised my studies on it.

Stenocoris (Erbula) stali sp. n.

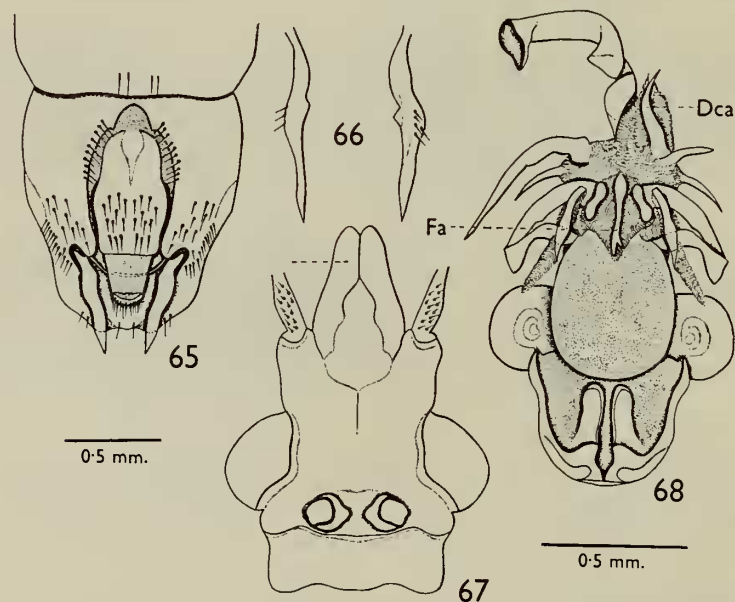
(Text-figs. 65-74)

Characterized by the shape of the claspers, by the median posterior margin of the ♀ seventh abdominal sternum and by the form of ♂ and ♀ genitalia.

♂. Body length, 12.4-14.0 mm., width, 1.66-2.26 mm. Head length, 1.6-1.86 mm., width, 1.2-1.25 mm. Antennae, segment I, 3.1-3.35 mm., II, 2.0-2.26 mm., III, 2.26-2.4 mm., IV, 4.0-4.13 mm. Rostrum, segment I, 1.2-1.3 mm., II, 1.2-1.33 mm., III, 0.65-0.7 mm., IV, 0.65-0.7 mm. Pronotum, length, 2.0-2.4 mm., width, 1.66-2.26 mm. Hind femora, 5.2-5.6 mm. Hind tibia, 5.5-6.0 mm. Distance between ocelli, 0.4-0.46 mm. Distance between an ocellus and an eye, 0.65-0.7 mm.

Body comparatively long, slim, pale, tinged with brown. Head medially and posteriorly brown; occipital suture medially concave with sides curved; paraclypeae short, usually flat, of uniform thickness. Antennae usually pale, tinged brown. Rostrum long, usually extending at least slightly beyond apices of second coxae. Lateral black line faint but extending from genae to anterior third of propleuron. Pronotal disc pale unicoloured with black spot on posterior angles. Legs pale, with apices of femora and bases of tibiae tinged with dark brown. Hemelytra with brown punctures on clavus and on anal area. Abdomen with dorsum, except connexiva, palish red, venter pale ochraceous. Posterior margin of seventh abdominal tergum truncated, pygophore elongated with bilobed apex.

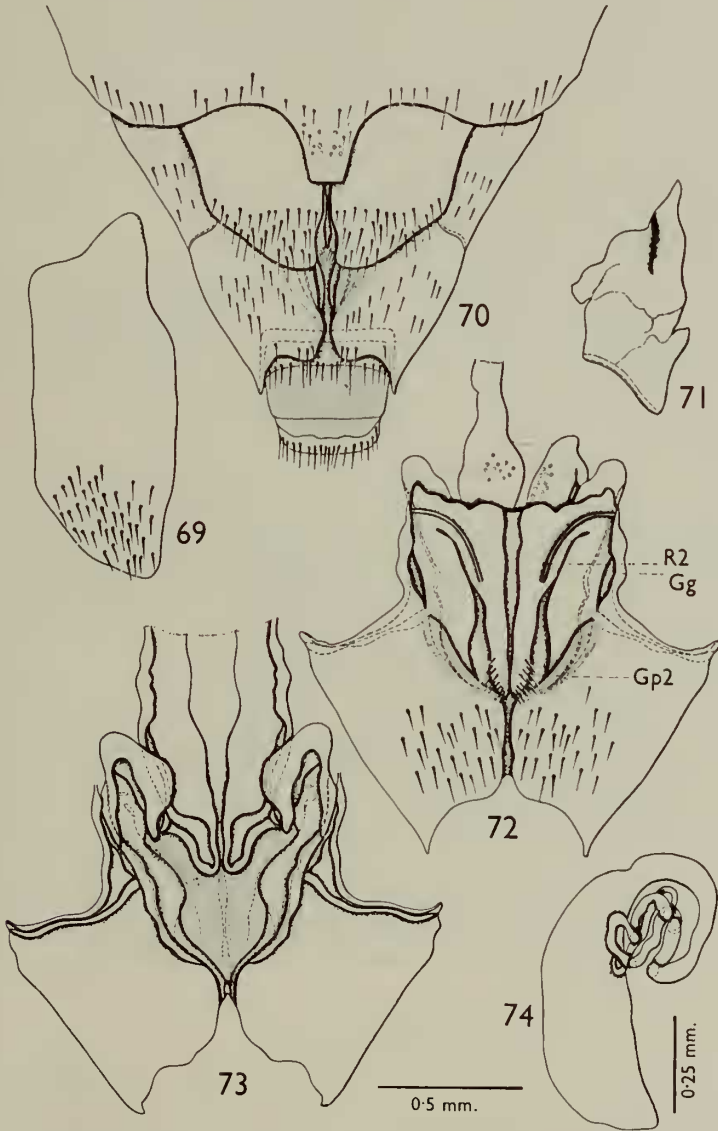
♂ GENITALIA: Claspers curved only in middle, narrow towards apices, acutely pointed; ventral thecal appendages as in Text-fig. 68; four left lateral conjunctival appendages as in Text-fig. 68; frontal appendage thinner in middle, bifid at apex, left branch longer and thicker; four right lateral conjunctival appendages as in Text-fig. 68; dorsal appendage strongly inwardly curved with pointed apex.



FIGS. 65-68. *Stenocoris (Erbula) stali*, ♂. 65, terminalia, dorsal view; 66, claspers, inner and outer views; 67, head, dorsal view; 68, aedeagus, ventral view.

♀. Body length, 15.0–15.8 mm., width, 2.0–2.1 mm. Head length, 1.8–1.9 mm., width, 1.2–1.4 mm. Antennae, segment I, 3.0–3.35 mm., II, 1.9–2.1 mm., III, 2.2–2.35 mm., IV, 4.0–4.2 mm. Rostrum, segment I, 1.33 mm., II, 1.33 mm., III, 0.7 mm., IV, 0.7 mm. Pronotum, length, 2.3–2.4 mm., width, 2.0–2.1 mm. Hind femora, 5.8 mm. Hind tibia, 6.0 mm. Distance between ocelli, 0.43 mm.; distance between an ocellus and an eye, 0.68 mm.

Very similar to ♂ in general appearance but usually distinctly longer; posterior margin of



FIGS. 69–74. *Stenocoris (Erbula) stali*, ♀. 69, first gonocoxa, ventral view; 70, terminalia, ventral view; 71, first gonophysis, ventral view; 72, ovipositor, ventral view; 73, same, dorsal view; 74, spermatheca.

seventh abdominal sternum with a median rectangular projection as in Text-fig. 70.

♀ GENITALIA : First gonocoxae broad, apex rounded ; intervalvular sacs absent ; spermatheca flask-shaped with a long curved neck as in Text-fig. 74.

Holotype ♂, CONGO : Congo da lemba, 1.ii.1913 (*R. Mayné*), Mus. R. Afr. centr.

Paratypes. 2 ♂, 2 ♀, with data as holotype, Mus. R. Afr. centr. ; CONGO : Katanga, Kando, 2 ♀, 25.iii.1931 (*G. F. de Witte*), Sokole, Eala, Sankuru, and Ubangi, 3 ♂, 2 ♀, 31.xii.1911, x.1923, 5.iv.1931, v.1937, 1952 (various collectors), Mobwasa, 1 ♀, 30.xi.1912 (*R. Mayné*), Mus. R. Afr. centr. ; SIERRA LEONE : Freetown, 1 ♂, 13.viii.1899 (*E. E. Austen*), B.M.(N.H.) ; NIGERIA ; Old Calabar, 1 ♂ (*Schouteden*), Mus. R. Afr. centr.

The range of this species extends in the west into Sierra Leone and in the east into Congo. Adults have been collected in the early part of the year until May, but they have not been collected in June or July.

This species is very close to *elegans* (Blöte) in general appearance but can easily be separated by the form of the claspers of the ♂. In ♀, the median projection of the seventh abdominal sternum separates it from all the species of this subgenus.

STENOCORIS (STENOCORIS) Burmeister

Type-species : *Cimex tipuloides* Degeer.

Body robust. Head elongated, usually distinctly longer than broad ; paraclypeae usually short, straight and rounded at apices ; ocelli close together but distance between an ocellus and an eye about one-third as long again as interocellar distance. Antennae with apical segment pale only at base, second usually distinctly shorter than third. Rostrum long, usually reaching second coxae. Lateral black line usually present, never extending beyond middle of propleuron. Pronotum sloping down towards head with posterior angles usually brownish black. Abdomen with dorsum usually palish red ; venter usually pale unicoloured.

In ♂, posterior margin of seventh abdominal tergum usually truncate ; pygophore usually rounded ; claspers crossed in socket (Text-fig. 75), curved in middle with apices pointed ; aedeagus with only ventral pair of thecal appendages ; dorsal pair wanting ; frontal conjunctival appendages paired, elongated and sclerotized ; membranous appendage with usually paired dorsal appendages, terminal appendage absent.

In ♀, posterior margin of seventh abdominal sternum medially bilobed ; first gonocoxae large, often mainly hidden under seventh abdominal sternum ; intervalvular sacs absent ; spermatheca flask-shaped with a long coiled tube.

This subgenus can be distinguished from other subgenera in the ♂ by the character of claspers which are crossed in a socket and in the ♀ by the bilobed posterior margin of seventh abdominal sternum.

KEY TO SPECIES

- 1 Rostrum reaching anterior base of hind coxae ; apices of femora tinged with red (frontal conjunctival appendages in ♂ aedeagus very short (Text-fig. 167)) ; spermatheca cylindrical (Text-fig. 174) *v-nigrum* (p. 57)
- Rostrum never reaching hind coxae ; apices of femora never tinged with red 2
- 2 Posterior angles of pygophore produced backward (Text-fig. 148) ; in ♀, posterior margin of seventh abdominal sternum deeply indented in middle (Text-fig. 93) 3

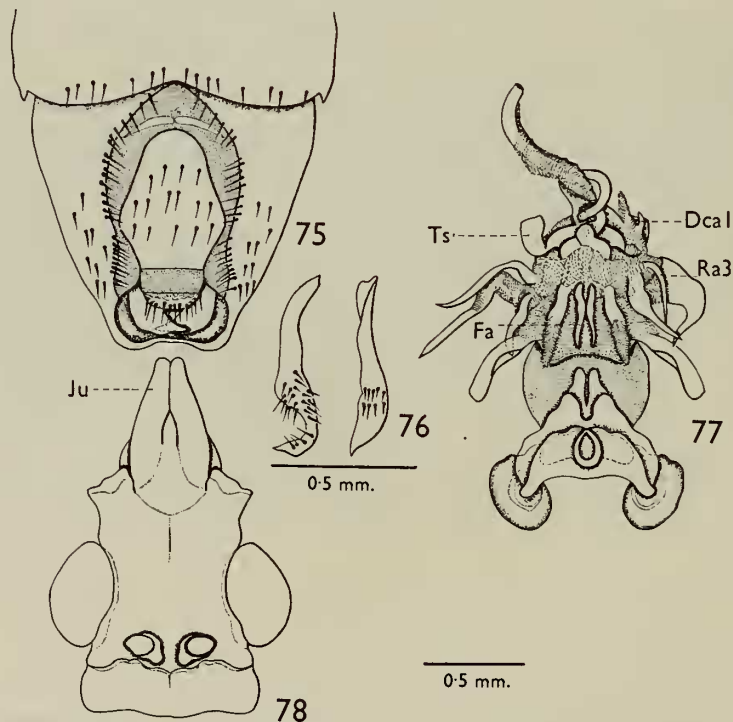
- Posterior angles never produced backward ; in ♀, posterior margin of seventh abdominal sternum only slightly indented (Text-fig. 124) or concave in form of a " V " 7
- 3 Pygophore large with posterior margin usually more than half width of posterior margin of ♂ seventh abdominal tergum (Text-fig. 88) ; processes of posterior margin of ♀ seventh abdominal sternum large and very prominent, sometimes conical or " U " -shaped (Text-fig. 93) 4
- Pygophore small, with narrow posterior margin, usually two-fifths width of posterior margin of seventh abdominal tergum (Text-fig. 107) ; processes of posterior margin of ♀ seventh abdominal sternum small, never triangular, usually posterior margin truncated (Text-fig. 111) 5
- 4 Rostrum long, extending beyond second coxae ; lateral black line, prominent on genae to middle of propleuron ; (claspers narrow in middle (Text-figs. 148 and 149), second spine-like appendage in aedeagus absent ; spermatheca flat (Text-fig. 156)) *sordida* (p. 52)
- Rostrum short, reaching second coxae, lateral black line faint, usually absent on genae ; (claspers broad in middle (Text-figs. 88 and 89) ; second spine-like appendage in aedeagus present ; spermatheca elongated (Text-fig. 95)) *apicalis* (p. 36)
- 5 Head elongated, about half again longer than broad (Text-fig. 78) with paraclypeae long and cylindrical, about 2/5 length of entire head ; lateral black line usually faint or absent on genae (aedeagus with first dorsal conjunctival appendage very small and curved ; spermatheca with smoothly curved neck (Text-fig. 80)) *africana* (p. 32)
- Head broad, usually only slightly longer than broad ; paraclypeae short, usually one-quarter length of entire head ; lateral black line prominent on genae and extending to anterior of propleuron 6
- 6 Rostrum long, extending well beyond apices of second coxae ; species comparatively robust, at least 14 mm. in length (dorsal thecal appendage present, rod-like in appearance (Text-fig. 112) ; right lateral conjunctival appendages three in number, fourth left lateral conjunctival appendage club-shaped ; in ♀, first gonocoxae with truncate posterior margin) *claviformis* (p. 41)
- Rostrum short, only just extending beyond apices of second coxae ; species comparatively small, length about 13.5 mm. (dorsal thecal appendage absent ; right lateral conjunctival appendages four in number, fourth bifurcated at apex, fourth left lateral conjunctival appendage rod-like, elongate) *ethiopis* (p. 43)
- 7 Rostrum long, extending well beyond apices of second coxae ; pygophore rounded with posterior margin medially distinctly emarginate (Text-fig. 119) ; a large basal portion of first gonocoxae concealed (Text-fig. 124). (Frontal conjunctival appendages very long nearly reaching anterior base of basal plate ; spermatheca with a narrow and a smoothly curved neck) *maculosa* (p. 44)
- Rostrum short, never extending well beyond apices of second coxae, usually reaching second coxae ; pygophore usually elongated (Text-fig. 128), rounded only in American species ; a very small basal portion of first gonocoxae concealed (Text-fig. 132) 8
- 8 Pygophore elongated (Text-fig. 128) ; first gonocoxae comparatively narrow at base, so that only a small basal portion of eighth paratergite concealed externally. African species 9
- Pygophore rounded (Text-fig. 98), first gonocoxae broad at base so that a large basal portion of eighth paratergite concealed externally (Text-fig. 102). American species 10
- 9 Lateral black line usually represented extending from either side of antenniferous tubercles to anterior of collar ; black spots on posterior angles of pronotum usually present, paraclypeae comparatively long and thinner at apices (frontal conjunctival appendages short and thick ; spermatheca elongated, with smoothly

- curved neck) *phthisica* (p. 49)
- Lateral black line usually represented by a black dot on either side of collar ; black spots on posterior angles of pronotum absent ; paraclypeae short and uniformly thick (frontal conjunctival appendages long and thin ; spermatheca almost pelican-shaped with a thick and coiled tube) *pallida* (p. 46)
- 10 Pale unicoloured species with thin paraclypeae, spots on posterior angles of pronotum absent, spermatheca round *braziliensis* (p. 48)
- Palish brown species with uniformly thick paraclypeae ; spots on posterior angles of pronotum always present ; spermatheca flask-shaped 11
- 11 Rostrum at least slightly extending beyond apices of second coxae ; lateral black line faintly represented ; in ♂, posterior margin of pygophore truncated (Text-fig. 85) *americana* (p. 34)
- Rostrum reaching anterior margin of second coxae ; lateral black line strongly represented ; in ♂, posterior margin of pygophore medially emarginate (Text-fig. 158) *tipuloides* (p. 55)

***Stenocoris (Stenocoris) africana* sp. n.**

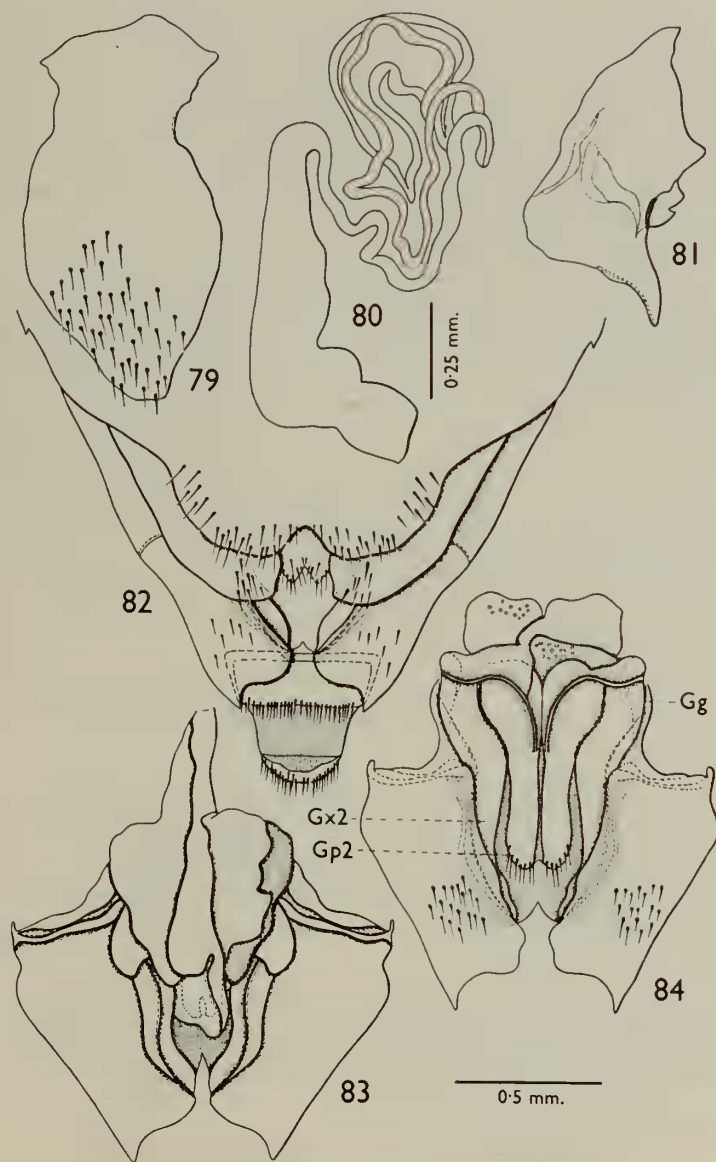
(Text-figs. 75-84)

Characterized by uniformly thin and long paraclypeae (Text-fig. 78), which are about two-fifths of entire head and by the form of ♂ and ♀ genitalia.



FIGS. 75-78. *Stenocoris africana*, ♂. 75, terminalia, dorsal view ; 76, claspers, inner and outer views ; 77, aedeagus (inflated), ventral view ; 78, head, dorsal view.

♂. Body length, 12.4–13.6 mm., width, 1.8–1.9 mm. Head length, 1.6–1.7 mm., width, 1.2–1.3 mm. Antennae, segment I, 3.2–3.7 mm., only paraclypeae 0.66 mm., II, 2.0–2.4 mm., III, 2.1–2.7 mm., IV, 3.6–4.1 mm. Rostrum, segment I, 1.2–1.3 mm., II, 1.3–1.4 mm., III,



FIGS. 79–84. *Stenocoris africana*, ♀. 79, first gonocoxa, ventral view; 80, spermatheca; 81, first gonopophysis, ventral view; 82, terminalia, ventral view; 83, ovipositor, ventral view; 84, same, dorsal view.

0.6–0.7 mm., IV, 0.7–0.8 mm. Pronotum length, 2.1–2.2 mm., width, 1.8–1.9 mm. Hind femora, 5.3–6.3 mm. Hind tibia, 5.6–6.5 mm. Distance between ocelli, 0.4 mm.; distance between an ocellus and an eye, 0.7 mm.

Body comparatively slim, palish brown. Head elongated, usually approximately half as long again as broad; occipital suture "U"-shaped in middle, sides convex; paraclypeae long, uniformly thin and round at apices, two-fifths of entire head. Antennae brownish black with underside of basal, usually basal halves of second and basal portions of apical segments pale. Rostrum short, usually reaching anterior margin of second coxae. Lateral black line well represented from lateral sides of antenniferous tubercles on to collars. Pronotal disc pale, posteriorly with brownish tinge, posterior angles with brownish black spots. Legs pale, with apices of femora and tibiae tinged with red. Costal and anal margins of hemielytra black, with black punctures on claval and anal areas. Abdomen dorsally, except connexival areas, tinged with red; venter pale ochraceous. Posterior margin of seventh abdominal tergum truncated, slightly medially concave; pygophore small with small posterior processes, posterior margin narrow, about one-third of seventh abdominal tergum.

♂ GENITALIA: Claspers small, medially thick and rounded at apices (Text-fig. 76); dorsal thecal appendages absent, ventral pair thin, medially curved and truncated at apices; four left lateral conjunctival appendages as in Text-fig. 77; frontal appendages paired, thin, short and medially curved; four right lateral conjunctival appendages as in Text-fig. 77, dorsal appendages as in Text-fig. 77.

♀. Body length, 15.0–15.5 mm., width, 2.2–2.4 mm. Head length, 1.7–1.9 mm., width, 1.3–1.4 mm. Antennae, segment I, 3.3–3.6 mm., (only paraclypeae 0.7–0.8 mm.), II, 2.3–2.4 mm., III, 2.4–2.5 mm., IV, 3.1–3.3 mm. Rostrum, segment I, 1.45–1.55 mm., II, 1.56–1.6 mm., III, 0.7–0.73 mm., IV, 0.8–0.83 mm. Pronotum, length, 2.4–2.6 mm., width, 2.2–2.4 mm. Hind femora, 6.0–6.4 mm. Hind tibia missing. Distance between ocelli, 0.4 mm., distance between an ocellus and an eye, 0.7 mm.

Very similar to ♂ in general appearance; posterior margin of seventh abdominal sternum indented in middle, forming broad and truncated lobes on either side (Text-fig. 82).

♀ GENITALIA: First gonocoxae largely concealed by seventh abdominal sternum, outer margin irregular with apices truncated; intervalvular sacs absent; spermatheca elongated, tapering towards apex with smoothly curved neck and thick coiled tube.

Holotype ♂, CONGO: Kivu, Terr. Mwenna Kitutu, 650 m., (lumière), vi.1958 (*N. Leleup*), Mus. R. Afr. centr.

Paratypes. CONGO: Uelé, Gangalena Bodio, 1 ♂, 14.v.1936 (*L. Lippens*), Nyangwe, 15am, 2 ♂, 30.iii, iv.1918 (*R. Mayné*), Kivu-mulungo, Tshibinda, 1 ♂, 2 ♀, 5.iv.1937, 22.iv.1938 (*Hendrickx*), Elizabethville, Kasongo, Kibambo, 4 ♂, vi.1930, iii.1932, viii.1959 (various collectors), Mus. R. Afr. centr.; SIERRA LEONE: Freetown, 13.vii.1899 (*E. E. Austen*), B.M.(N.H.); ABYSSINIA: Mulatos, Haxor, 1 ♂, 22–25. x.1920, A.M.N.H.

This species is very close to *S. phthisica* (Gerstäcker) and *S. maculosa* (Blöte), but can easily be separated from the latter by short rostrum and from the former by short lateral black line, never extending beyond the collar.

Stenocoris (Stenocoris) americana sp. n.

(Text-figs. 85–87)

Characterized by pale body, long rostrum, reaching beyond the second coxae and by the form of ♂ and ♀ genitalia.

♂. Body length, 13.0–14.0 mm., width, 2.0–2.1 mm. Head length, 1.8–1.9 mm., width, 1.3–1.4 mm. Antennae, segment I, 3.0–3.1 mm., II, 2.2–2.3 mm., III, 2.3 mm., IV, 3.3 mm. Rostrum, segment I, 1.3 mm., II, 1.4 mm., III, 0.7 mm., IV, 0.8 mm. Pronotum, length, 2.2–2.4 mm., width, 2.0–2.1 mm. Hind femora, 5.9–6.0 mm. Hind tibia, 6.1–6.3 mm. Distance between ocelli, 0.4 mm., distance between an ocellus and an eye, 0.66 mm.

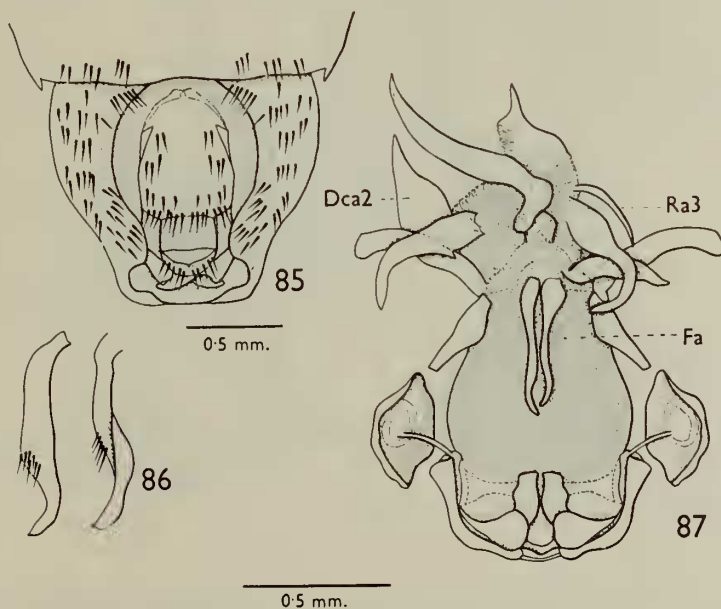
Body pale, comparatively slim. Head slightly tapering behind occipital suture, at least a third as long again as broad, pale with a brownish tinge; occipital suture medially concave, arms bending forward; paraclypeae short, about one-third of head; uniformly thin and pointed at apices. Antennae with underside of basal segment, three-quarters of second and third and basal portions of apical segments pale. Rostrum comparatively long, at least extending slightly beyond apices of second coxae. Lateral black line faint, extending from genae on to anterior third of propleuron. Pronotal disc pale, tinged with light brown, black spots on posterior angles faint. Legs pale, apices of femur and tibia tinged with light brown. Hemielytra brownish black. Abdomen with dorsum, excluding connexiva, red, venter pale ochraceous. Posterior margin of seventh abdominal tergum truncate; pygophore rounded with sides curved near apex, posterior margin truncate.

♂ GENITALIA: Claspers strongly curved in middle and at apices, acutely pointed; dorsal thecal appendages absent, ventral pair long thicker in middle and truncated at apices; four left lateral conjunctival appendages as in Text-fig. 87; frontal appendages paired, longest of all, strongly inwardly curved and acutely pointed at apices, four right lateral conjunctival appendages as in Text-fig. 87; dorsal appendages as in Text-fig. 87.

No ♀ available for study.

Holotype ♂, ECUADOR: Puna, Riksmus. Stockholm.

Paratypes, 1 ♂, with same data as holotype. Riksmus. Stockholm; VENEZUELA: Dapure San Fernada de Apure, Mayeul, 1 ♂, 1923, Mus. Hist. nat. Paris.



FIGS. 85–87. *Stenocoris americana*, ♂. 85, terminalia, dorsal view; 86, claspers, inner and outer views; 87, aedeagus (inflated), ventral view.

This species is very close to *S. tipuloides* (Degeer) and *S. braziliensis* sp. n. but can be separated by its comparatively long rostrum, which extends beyond apices of second coxae and by faint brownish black spots on the posterior angles of pronotum.

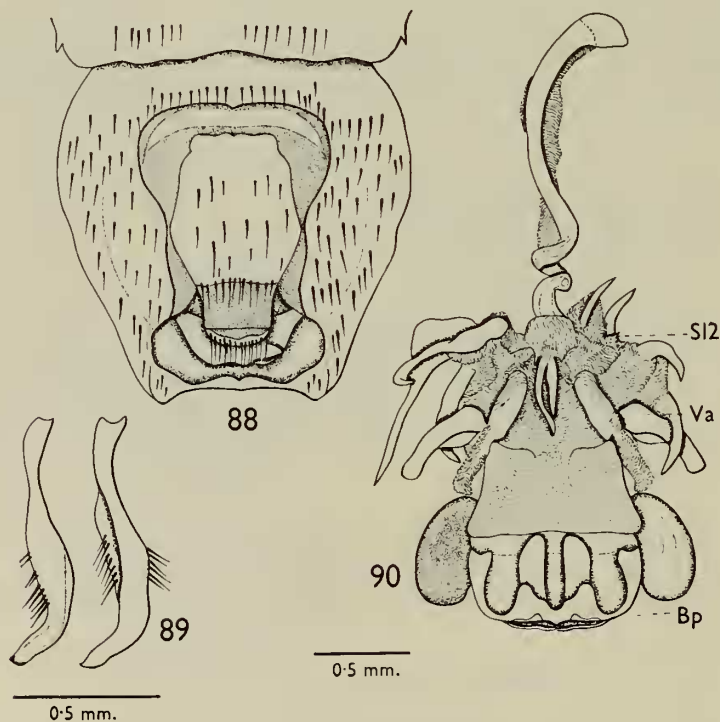
***Stenocoris (Stenocoris) apicalis* (Westwood) comb. n.**

(Text-figs. 88-96)

Leptocorisa apicalis Westwood, 1842 : 18

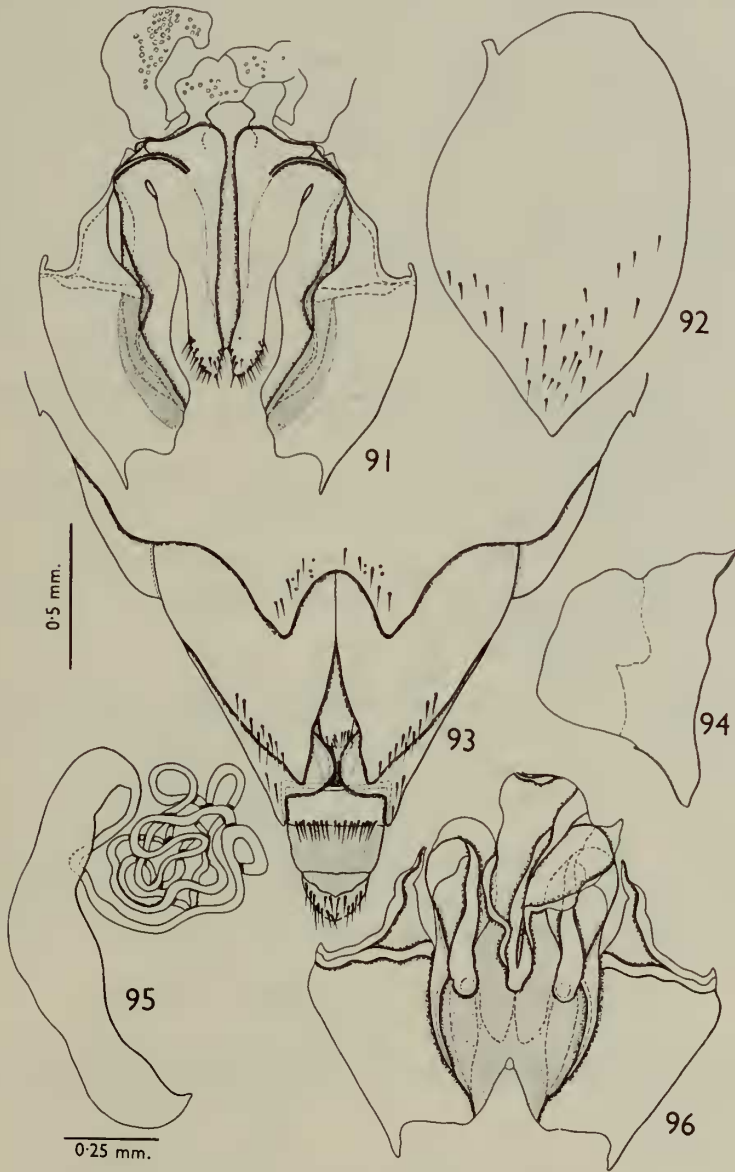
Characterized by medially strongly indented ♀ seventh abdominal sternum, giving triangular processes on either side, by large pygophore with strong posterior processes and by ♂ and ♀ genitalia.

♂. Body length, 12.8-13.5 mm., width, 2.1-2.3 mm. Head length, 1.6-1.9 mm., width, 1.3-1.46 mm. Antennae, segment I, 3.6-3.86 mm., II, 2.3-2.6 mm., III, 2.35-2.7 mm., IV, 4.0-4.2 mm. Rostrum, segment I, 1.4-1.5 mm., II, 1.4-1.5 mm., III, 0.7-0.73 mm., IV, 0.7-0.73 mm. Pronotum, length, 2.3-2.5 mm., width, 2.1-2.3 mm. Hind femora, 5.6-6.0 mm. Hind tibia, 6.0-6.4 mm. Distance between ocelli, 0.4-0.5 mm., distance between an ocellus and an eye, 0.7-0.75 mm.



FIGS. 88-90. *Stenocoris apicalis*, ♂. 88, terminalia, dorsal view ; 89, claspers, outer and inner views ; 90, aedeagus, ventral view.

Body comparatively robust, pale, tinged with black. Head slightly longer than broad; occipital suture medially "V"-shaped, following convexly towards sides; paraclypeae short, uniformly thick and rounded at apices. Antennae with underside of basal segment and basal portion of apical segments pale. Rostrum comparatively long, distinctly extending beyond



FIGS. 91-96. *Stenocoris apicalis*, ♀. 91, ovipositor, ventral view; 92, first gonocoxa, ventral view; 93, terminalia, ventral view; 94, first gonopophysis, ventral view; 95, spermatheca; 96, ovipositor, dorsal view.

apices of second coxae. Lateral black line faint, extending from genae on to anterior of propleuron. Pronotal disc pale, brownish black spots on posterior angles present. Legs pale, tibiae and tarsi tinged with black. Anal margins and *M-Cu* cell of hemielytra black. Abdomen with dorsum, excluding connexiva, red, venter pale ochraceous. Posterior margin of seventh abdominal tergum truncated, pygophore large, posterior processes prominent, acute; posterior margin broad, more than half the width of posterior margin of seventh abdominal tergum.

♂ GENITALIA: Claspers broad in middle, not strongly curved at apices; dorsal thecal appendages absent, ventral pair thicker at base with round apices; four left lateral conjunctival appendages as in Text-fig. 90; frontal conjunctival appendages paired, left long, thin and curved; four right lateral conjunctival appendages as in Text-fig. 90; dorsal appendages as in Text-fig. 90, with second spine-like appendage at base.

♀. Body length, 13.3–14.6 mm., width, 2.2–2.3 mm. Head length, 1.6–1.9 mm., width, 1.4–1.5 mm. Antennae, segment I, 3.3–3.6 mm., II, 2.0–2.3 mm., III, 2.3–2.5 mm., IV, 3.9–4.1 mm. Rostrum, segment I, 1.4–1.5 mm., II, 1.4–1.5 mm., III, 0.7–0.8 mm., IV, 0.7–0.8 mm. Pronotum, length, 2.3–2.4 mm., width, 2.2–2.3 mm. Hind femora, 5.2–6.0 mm. Hind tibia, 5.9–6.3 mm.; distance between ocelli, 0.4–0.5 mm.; distance between an ocellus and an eye, 0.7–0.8 mm.

Very similar to ♂ in general appearance; posterior margin of seventh abdominal sternum strongly indented medially, giving triangular processes on either side.

♀ GENITALIA: First gonocoxae large, concealing a large portion of ninth paratergite, broader at base and acutely pointed at apices; intervalvular sacs absent; spermatheca of thick crescent shape with a long and coiled tube.

Type material. Holotype ♀, without data but with type labels, Hope Dept., Univ. Mus. Oxford.

Other material. CONGO: 21 ♂, 30 ♀; GHANA: 2 ♂; CAMEROON: 15 ♂, 13 ♀.

This species seems to be restricted to the West African region. Adults have been collected from February until October.

This species is the closest to *S. sordida* (Blöte) but can be separated by triangular processes of ♀ seventh abdominal sternum and by broad posterior margin of the pygophore, which is always more than half the width of seventh abdominal tergum.

Stål, by misidentifying a hitherto unnamed species (now described as *S. (Erbula) southwoodi* sp. n.) as *Stenocoris apicalis* Westwood, established a subgenus (*Erbula*) to contain it.

The holotype ♀ (see above) is a typical *Stenocoris* s. str. in having bilobed posterior margin of seventh abdominal sternum and in lacking short tube of spermatheca, which is curled round its neck in *Erbula*.

Stenocoris (Stenocoris) braziliensis sp. n.

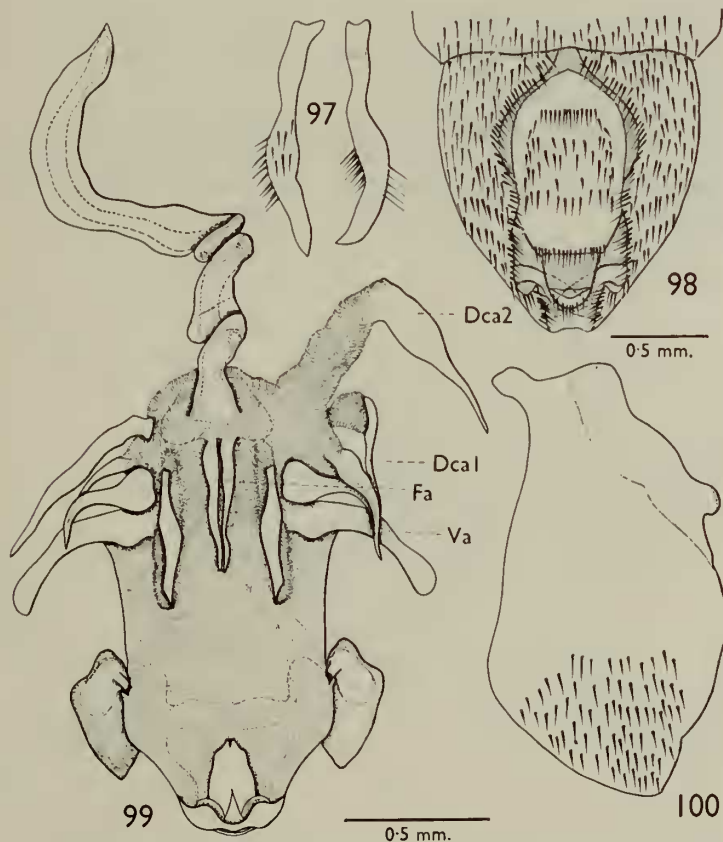
(Text-figs. 97–105)

Characterized by parallel-sided head, pale unicoloured body and by the form of ♂ and ♀ genitalia.

♂. Body length, 14.0–15.2 mm., width, 2.0–2.3 mm. Head length, 1.8–1.9 mm., width, 1.3–1.4 mm. Antennae, segment I, 3.0–3.6 mm., (only paraclypeae, 0.66–0.7 mm.), II, 2.1–2.3 mm., III, 2.3–2.5 mm., IV, 3.9–3.1 mm. Rostrum, segment I, 1.2–1.4 mm., II, 1.2–1.4 mm., III, 0.7–0.75 mm., IV, 0.8–0.85 mm. Pronotum, length, 2.4–2.5 mm., width, 2.0–2.3 mm. Hind femora, 5.6–6.0 mm. Hind tibia, 6.0–6.5 mm. Distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.6 mm.

Body comparatively robust, pale unicoloured. Head parallel-sided, long, at least a third again longer than broad; occipital suture "V"-shaped with arms curving outwards towards sides of head; paraclypeae long, more than a third of head-length, uniformly thin and rounded at apices. Antennae pale, tinged black, with underside of basal segment, middle of second and third and basal portions of apical segments pale. Rostrum short, hardly reaching apices of second coxae. Lateral black line usually very faint, extending from sides of antenniferous tubercles on to anterior of propleuron. Pronotal disc, posteriorly with greenish tinge, posterior angles without black spots. Legs with bases of femora tinged with green and apices brownish. Anal margin and *M-Cu* cell of hemielytra brownish black. Abdomen with dorsum pale, unicoloured, venter pale, sometimes brownish. Posterior margin of seventh abdominal tergum truncated; pygophore rounded, tapering posteriorly with narrow, medially concave posterior margin.

♂ GENITALIA: Claspers comparatively long, thicker in middle, curved and pointed at apices; dorsal thecal appendages absent, ventral pair long, thicker at bases and rounded at apices; four left lateral conjunctival appendages as in Text-fig. 99; frontal conjunctival appendages paired, of equal sizes, long, thick at bases and acutely pointed at apices; four right lateral conjunctival appendages as in Text-fig. 99; dorsal appendages as in Text-fig. 99.



FIGS. 97-100. *Stenocoris braziliensis*. 97-99, ♂, 100, ♀. 97, claspers, inner and outer views; 98, terminalia, dorsal view; 99, aedeagus (inflated), ventral view; 100, first gonocoxa, ventral view.

♀. Body length, 14.5–15.5 mm., width, 2.2–2.3 mm. Head length, 1.9–2.0 mm., width, 1.3–1.4 mm. Antennae, segment I, 3.3–3.7 mm., (only paraclypeae 0.7–0.8 mm.), II, 2.3–2.5 mm., III, 2.4–2.6 mm., IV, missing. Rostrum, segment I, 1.3–1.5 mm., II, 1.4–1.5 mm., III, 0.7–0.8 mm., IV, 0.8–0.85 mm. Pronotum, length, 2.50–2.66 mm., width, 2.2–2.3 mm. Hind femora, 5.7–6.4 mm. Hind tibia, 6.1–6.7 mm. Distance between ocelli, 0.5–0.6 mm., distance between an ocellus and an eye, 0.6–0.7 mm.

Very similar to ♂ in general appearance and colour ; posterior margin of seventh abdominal sternum with a "U"-shaped median indentation.

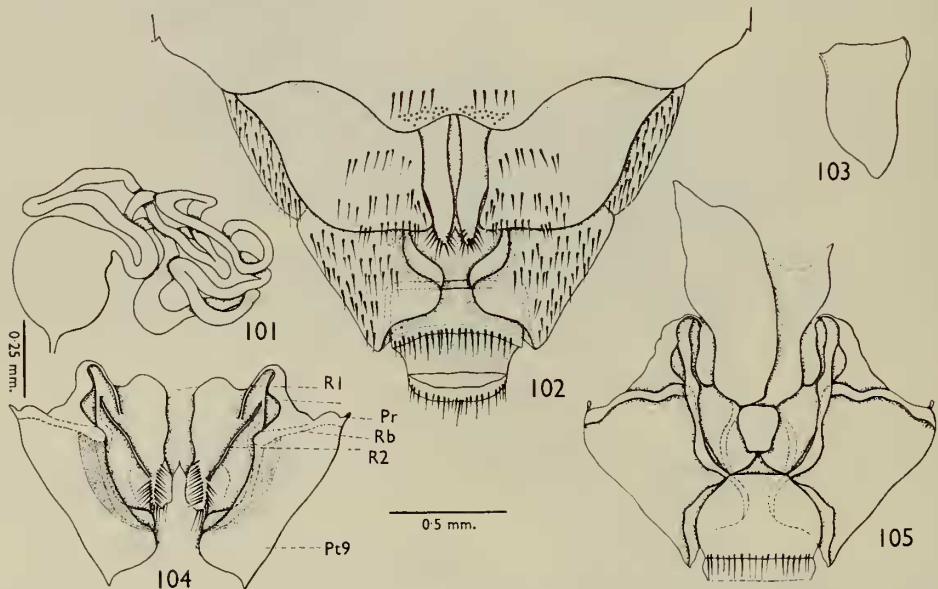
♀ GENITALIA : First gonocoxae almost triangular in form, apices rounded ; intervalvular sacs absent ; spermatheca round, bladder-shaped with a long and thick coiled tube (Text-fig. 101).

Holotype ♂, BRAZIL : State of Amazonas, Rio Cairy Uaapes, 1906 (*Schmidt*), A.M.N.H.

Paratypes. 1 ♂, 1 ♀, with data as holotype, A.M.N.H. ; MEXICO : Tapanatepec, 3 miles north Oaxaca, 2 ♂, 1 ♀, 22.xii.1955 (*J. C. Schaffner*), Ahmad Coll. ; 1 ♂ with some data as above, in Coll. *J. C. Schaffner* ; PANAMA CANAL ZONE : Darien, 2 ♀ (*F. Geay*), Mus. Hist. nat. Paris.

This species seems to be distributed as far as Oaxaca (Mexico) in the northern part of Neotropical region.

This species is close to *S. tipuloides* (Degeer) and *S. americana* sp. n. but can be separated by parallel-sided head, by uniformly thin, straight and long paraclypeae, which are rounded at the apices and by the lack of black spots on the posterior angles of pronotum.



FIGS. 101–105. *Stenocoris braziliensis*, ♀. 101, spermatheca ; 102, terminalia, ventral view ; 103, first gonopophysis, ventral view ; 104, ovipositor, ventral view ; 105, same, dorsal view.

Stenocoris (Stenocoris) claviformis sp. n.

(Text-figs. 106-115)

Characterized by club-shaped appendage in the aedeagus, by truncated processes of ♀ seventh abdominal sternum and by ♂ and ♀ genitalia.

♂. Body length, 13.5-14.2 mm., width, 2.0-2.15 mm. Head length, 1.6-1.7 mm., width, 1.4-1.6 mm. Antennae, segment I, 3.3-3.6 mm., II, 2.1-2.3 mm., III, 2.3-2.6 mm., IV, 3.6-4.0 mm. Rostrum, segment I, 1.5-1.6 mm., II, 1.5-1.6 mm., III, 0.8-0.83 mm., IV, 0.8-0.85 mm. Pronotum, length, 2.3-2.4 mm., width, 2.0-2.15 mm. Hind femora, 5.5-5.6 mm. Hind tibia, 6.0-6.1 mm. Distance between ocelli, 0.4-0.45 mm., distance between an ocellus and an eye, 0.7-0.73 mm.

Body robust, pale, tinged with black. Head comparatively short, slightly longer than broad; occipital suture medially concave, sides curving outwards; paraclypeae comparatively short, thinner at base and rounded at apices. Antennae brownish black, with underside of basal segments, bases and middle of second and bases of apical segments pale. Rostrum comparatively long, extending well beyond apices of second coxae. Lateral black line well represented, extending from genae on to anterior propleuron. Pronotal disc with blackish punctures, black spots on posterior angles present. Legs with apices of femora, tibiae and tarsi tinged with dark brown. Hemelytra with black punctures. Abdomen with dorsum, excluding connexiva, red, venter pale ochraceous. Posterior margin of seventh abdominal tergum truncated, usually slightly produced in middle; pygophore broader at base, tapering posteriorly; posterior margin about two fifths of width of posterior margin of seventh abdominal tergum.

♂ GENITALIA: Claspers uniformly thin, strongly curved and acutely pointed at apices; very small, fused, rod-like dorsal thecal appendages present, ventral appendages paired, thick at bases and very thin and curved near apices; four left lateral conjunctival appendages as in Text-fig. 113; frontal appendages longest of all, left thick, longer and curved; dorsal conjunctival appendages as in Text-fig. 113.

♀. Body length, 14.4-15.0 mm., width, 2.2-2.3 mm. Head length, 1.7-1.8 mm., width, 1.4-1.6 mm. Antennae, segment I, 3.2-4.1 mm., II, 2.0-2.7 mm., III, 2.2-2.5 mm., IV, 3.8-4.2 mm. Rostrum, segment I, 1.5-1.6 mm., II, 1.5-1.6 mm., III, 0.7-0.8 mm., IV, 0.8-0.9 mm. Pronotum, length, 2.3-2.5 mm., width, 2.2-2.3 mm. Hind femora, 5.3-5.6 mm. Hind tibia, 5.6-6.1 mm. Distance between ocelli, 0.4-0.46 mm., distance between an ocellus and an eye, 0.7-0.8 mm.

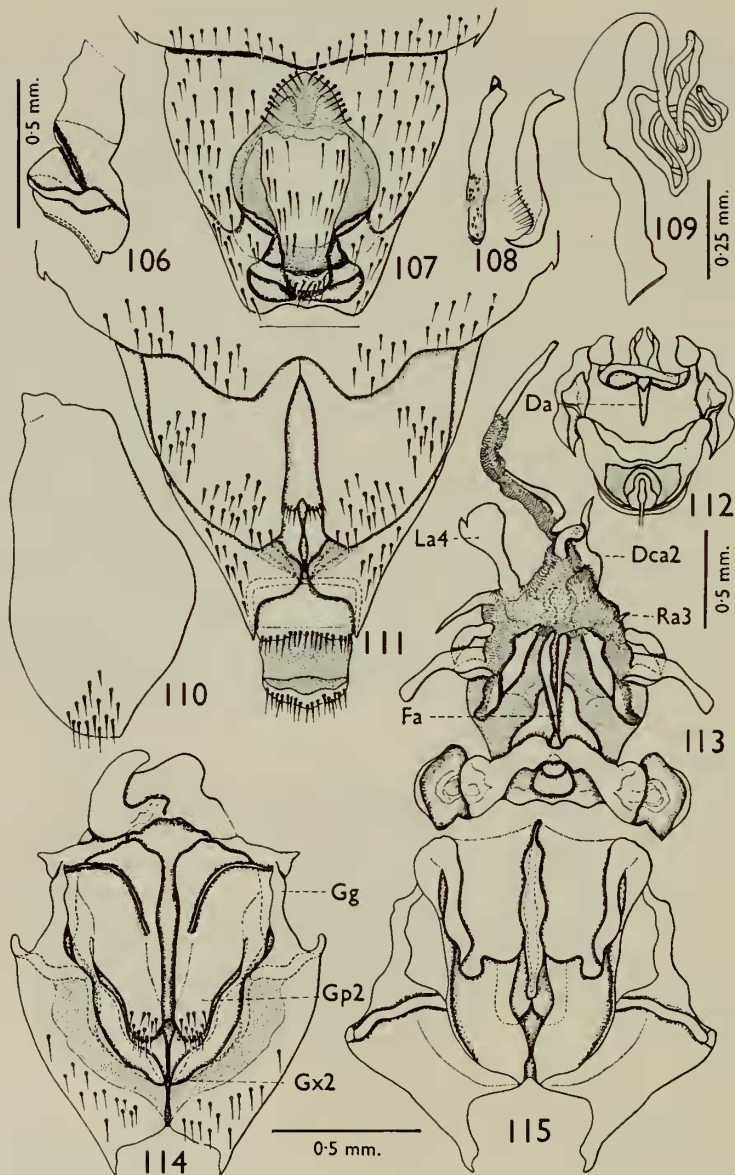
Very similar to ♂ but slightly longer, posterior margin of seventh abdominal venter medially indented, giving two truncated processes (Text-fig. 111).

♀ GENITALIA: First gonocoxae comparatively small, apices truncated (Text-fig. 110); intervalvular sacs absent; spermatheca tubular, slightly thicker in middle with a long coiled tube as in Text-fig. 109.

Holotype ♂, CONGO: Kasongo, ix.1959 (*P. L. G. Benoit*), Mus. R. Afr. centr.

Paratypes. 1 ♂ with same data as holotype, Mus. R. Afr. centr.; Uelé, Gangalano Bodio, Lulua, Capsanga, Bongo da lemba, 5 ♂, 7 ♀, 15.v.1936, ix.1952, i.1933, ii.1913 (various collectors), Mus. R. Afr. centr.; CAMEROON: Lolodorf, 8 ♂, 3 ♀ (*A. I. Good*), Carnegie Mus.

This species is closest to *S. africana* sp. n. in having small posterior processes of pygophore and truncated processes of ♀ seventh abdominal sternum. However it can easily be separated from *S. africana* by long rostrum, extending well beyond the apices of second coxae.



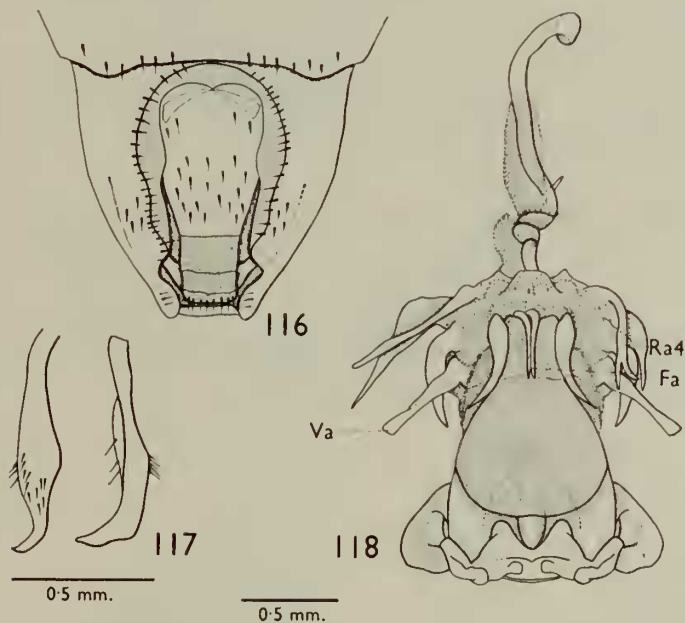
FIGS. 106-115. *Stenocoris claviformis*. 107, 108, 112-113, ♂, 106, 109-111, 114-115, ♀. 106, first gonopophysis, ventral view; 107, terminalia, dorsal view; 108, claspers, inner and outer views; 109, spermatheca; 110, first gonocoxa, ventral view; 111, terminalia, ventral view; 112, theca, dorsal view; 113, aedeagus (inflated), ventral view; 114, ovipositor, ventral view; 115, same, dorsal view.

Stenocoris (Stenocoris) ethiopsis sp. n.

(Text-figs. 116-118)

Characterized by small size of the body, divergent paraclypeae and by the form of the ♂ and ♀ genitalia.

♂. Body length, 12.0 mm., width, 1.8 mm. Head length, 1.6 mm., (only paraclypeae 0.6 mm.), width, 1.3 mm. Antennae, segment I, 3.2 mm., II, 2.0 mm., III, 2.3 mm., IV, 4.1 mm. Rostrum, segment I, 1.3 mm., II, 1.3 mm., III, 0.65 mm., IV, 0.7 mm. Pronotum, length, 2.2 mm., width, 1.8 mm. Hind femora, 5.1 mm. Hind tibia, 5.6 mm. Distance between ocelli, 0.4 mm., distance between an ocellus and an eye, 0.7 mm.



FIGS. 116-118. *Stenocoris ethiopsis*, ♂. 116, terminalia, dorsal view; 117, claspers, inner and outer views; 118, aedeagus (inflated), ventral view.

Body comparatively very short and slim, pale, tinged with black. Head only about a quarter as long again as broad; occipital suture medially concave, arms curving outwards; paraclypeae about one-third of head, thicker in middle, very thin and divergent at apices. Antennae with underside of basal segments, articulations of first and second, second and third, middle of second and basal portions of apical segments, pale. Rostrum extending at least slightly beyond apices of second coxae. Lateral black line faint, extending from genae on to anterior of propleuron. Pronotal disc pale with black punctures, with smooth black spots on posterior angles. Legs with apices of femora slightly brownish. Hemelytra with black punctures on anal and claval areas. Abdomen with dorsum pale, unicolourous, venter pale ochraceous. Posterior margin of seventh abdominal tergum truncated, slightly laterally produced on either side; pygophore with small and rounded posterior processes, posterior margin a third of width of posterior margin of seventh abdominal tergum.

♂ GENITALIA : Claspers thicker in middle, strongly curved and pointed at apices ; dorsal thecal appendages absent, ventral paired, very thin, elongated and truncate at apices, four left lateral conjunctival appendages as in Text-fig. 118 ; frontal appendages paired, long, thin and curved at bases ; four right lateral conjunctival appendages with fourth bifurcated at apex (Text-fig. 118) ; dorsal appendages as in Text-fig. 118.

No ♀ available for study.

Holotype ♂, GHANA : Tafo, 24.iii-20.iv.1959 (*R. Smith*) (recorded by Southwood, 1961, on light trap), B.M.(N.H.).

Paratypes. 2 ♂, same data as holotype, but without terminalia, B.M.(N.H.).

This seems to be a rare species and is probably confined to West Africa.

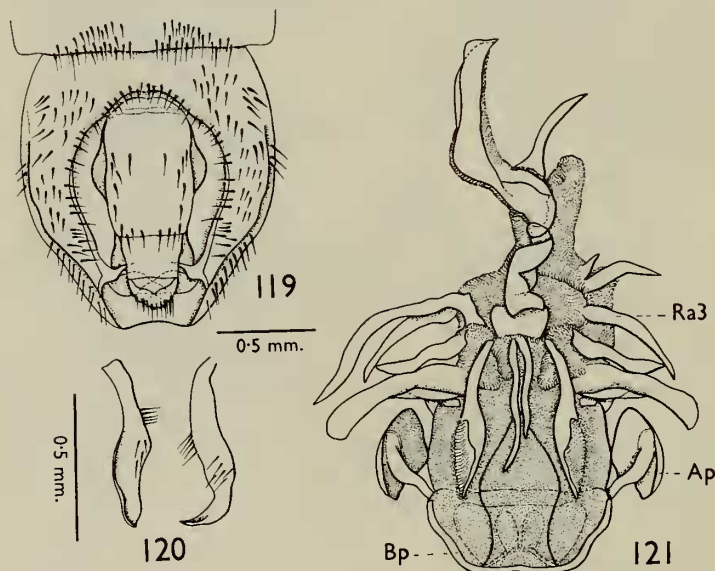
This species is close to *S. claviformis* sp. n. and *S. africana* sp. n. but can be separated from them in having medium sized rostrum only slightly extending beyond apices of second coxae (extending well beyond the apices of second coxae in *claviformis* and in *africana* never extending beyond second coxae). Its bifurcated fourth right lateral conjunctival appendage is its peculiarity.

***Stenocoris (Stenocoris) maculosa* (Blöte) comb. n.**

(Text-figs. 119-127)

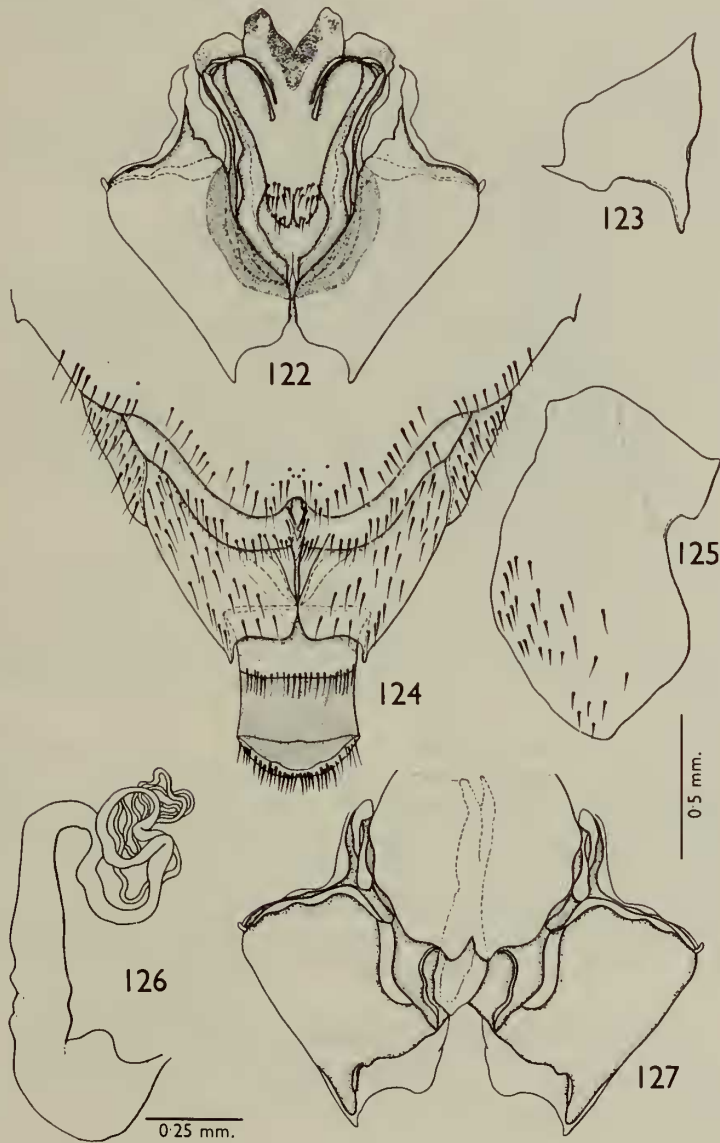
Leptocorixa (Stenocoris) maculosa Blöte, 1937 : 290 ; Villiers, 1963 : 232

Characterized by long rostrum extending well beyond the apices of second coxae and by the form of the ♂ and ♀ genitalia.



FIGS. 119-121. *Stenocoris maculosa*, ♂. 119, terminalia, dorsal view ; 120, claspers, inner and outer views ; 121, aedeagus (inflated), ventral view.

♂. Body length, 13.0–15.5 mm., width, 1.9–2.1 mm. Head length, 1.7–1.9 mm., width, 1.2–1.3 mm. (only paraclypeae 0.6 mm.). Antennae, segment I, 3.2–3.5 mm., II, 2.1–2.4 mm., III, 2.3–2.5 mm., IV, 3.5–3.7 mm. Rostrum, segment I, 1.3–1.4 mm., II, 1.3–1.4 mm., III, 0.7–0.73 mm., IV, 0.75–0.85 mm. Pronotum, length, 2.2–2.4 mm., width, 1.9–2.1 mm. Hind femora, 5.1–6.0 mm. Hind tibia, 5.3–6.5 mm. Distance between ocelli, 0.4 mm.; distance between an ocellus and an eye, 0.75 mm.



FIGS. 122–127. *Stenocoris maculosa*, ♀. 122, ovipositor, ventral view; 123, first gonopophysis, ventral view; 124, terminalia, ventral view; 125, first gonocoxa, ventral view; 126, spermatheca; 127, ovipositor, dorsal view.

Body linear, pale, tinged with black. Head at least a third as long again as broad; occipital suture medially concave, arms curving outwards towards sides; paraclypeae long, uniformly thin and rounded at apices. Antennae with underside of basal segment, middle of second and third and bases of fourth, pale. Rostrum long, extending well beyond apices of second coxae. Lateral black line usually represented by two black dots on sides of antenniferous tubercles and collar. Pronotal disc tinged with light brown, posterior angles with brownish black spots. Legs with apices of femora tinged with red. Hemielytra blackish, anal and claval areas with black punctures. Abdomen with dorsum, excluding connexiva, red, venter pale ochraceous. Posterior margin of seventh abdominal tergum truncate; pygophore small, rounded, with emarginate posterior margin.

♂ GENITALIA: Claspers thicker in middle with a long thin neck, apices pointed; dorsal thecal appendages absent, ventral pair curved in middle and rounded at apices; four left lateral conjunctival appendages as in Text-fig. 121; frontal appendages paired, very long, uniformly thin and curved near bases and apices; four right lateral conjunctival appendages as in Text-fig. 121; dorsal appendages as in Text-fig. 121.

♀. Body length, 14.5–16.0 mm., width, 2.1–2.4 mm. Head length, 1.8–2.0 mm., width, 1.4–1.5 mm. Antennae, segment I, 3.1–3.2 mm., II, 2.2–2.4 mm., III, 2.3–2.5 mm., IV, 3.0–3.6 mm. Rostrum, segment I, 1.5–1.6 mm., II, 1.5–1.6 mm., III, 0.7–0.75 mm., IV, 0.75–0.85 mm. Pronotum, length, 2.4–2.8 mm., width, 2.1–2.4 mm. Hind femora, 5.9–6.2 mm. Hind tibia, 6.3–6.5 mm. Distance between ocelli, 0.4–0.5 mm., distance between an ocellus and an eye, 0.7–0.85 mm.

Very similar to ♂ in general appearance and colour, slightly larger; posterior margin of seventh abdominal sternum almost inverted "V"-shaped in middle as in Text-fig. 124.

♀ GENITALIA: First gonocoxae largely concealed by seventh abdominal sternum, apices rounded; intervalvular sacs absent, spermatheca tapering anteriorly with lateral margins irregular and a small, thick and coiled tube (Text-fig. 126).

Type material. Holotype ♂, SOUTH AFRICA: Pondoland, Port St. John, x.1923 (R. E. Turner), B.M.(N.H.); allotype ♀, data as holotype, B.M.(N.H.); paratypes, SOUTH AFRICA: Zululand, Natal, Durban, 4 ♂, 3 ♀, 20–21.ii.1925 (C. N. Barker), B.M.(N.H.); Umkomaas River, 1 ♂, 1847, B.M.(N.H.); UGANDA: Siroko R., near foot of Mt. Elgon, 3,600 ft., 1 ♂, 1–14.viii.1911 (S. A. Neave), B.M.(N.H.).

Other material. CONGO: 30 ♀, 36 ♀; UGANDA: 1 ♂, 2 ♀; ANGOLA: 2 ♂; TANGANYIKA: 14 ♂, 5 ♀; CAMEROONS: 1 ♂; RHODESIA (N. and S.): 2 ♂.

The range of this species seems to extend in the west into Cameroons and in the east into Tanganyika, but it is particularly common in southern Africa, Rhodesia and Angola. The adults have been collected from May until November.

This species is close to *S. phthisica* (Gerstäcker), *S. pallida* (Blöte) and *S. africana* sp. n. in general appearance but can easily be separated from them by the long rostrum, which extends well beyond the apices of second coxae.

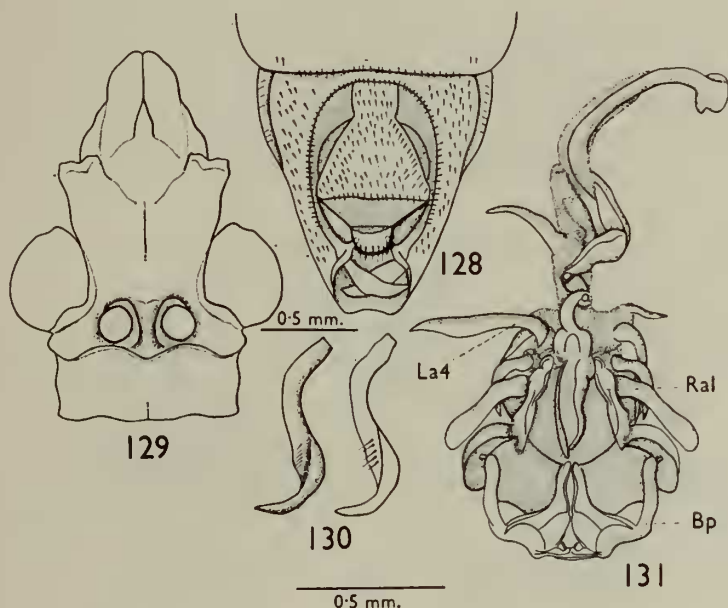
Stenocoris (Stenocoris) pallida (Blöte) comb. n.

(Text-figs. 128–137)

Leptocorixa (Stenocoris) pallida Blöte, 1937: 295

Characterized by the pale unicolourous disc of pronotum, which is without black spots on posterior angles, by a black dot on sides of collar and by the form of ♂ and ♀ genitalia.

♂. Body length, 13.5–14.5 mm., width, 1.9–2.1 mm. Head length, 1.8–2.0 mm., width, 1.3–1.4 mm. (only paratype 0.6–0.7 mm.). Antennae, segment I, 3.6–3.8 mm., II, 2.4–2.6 mm., III, 2.5–2.7 mm., IV, 3.8–4.1 mm. Rostrum, segment I, 1.3–1.5 mm., II, 1.3–1.5 mm., III, 0.65–0.75 mm., IV, 0.75–0.85 mm. Pronotum, segment I, 2.3–2.6 mm., width, 1.9–2.1 mm. Hind femora, 6.0–6.4 mm. Hind tibia, 6.5–6.8 mm. Distance between ocelli, 0.4–0.45 mm., distance between an ocellus and an eye, 0.6–0.67 mm.



FIGS. 128–131. *Stenocoris pallida*, ♂. 128, terminalia, dorsal view; 129, head, dorsal view; 130, claspers, inner and outer views; 131, aedeagus (inflated), ventral view.

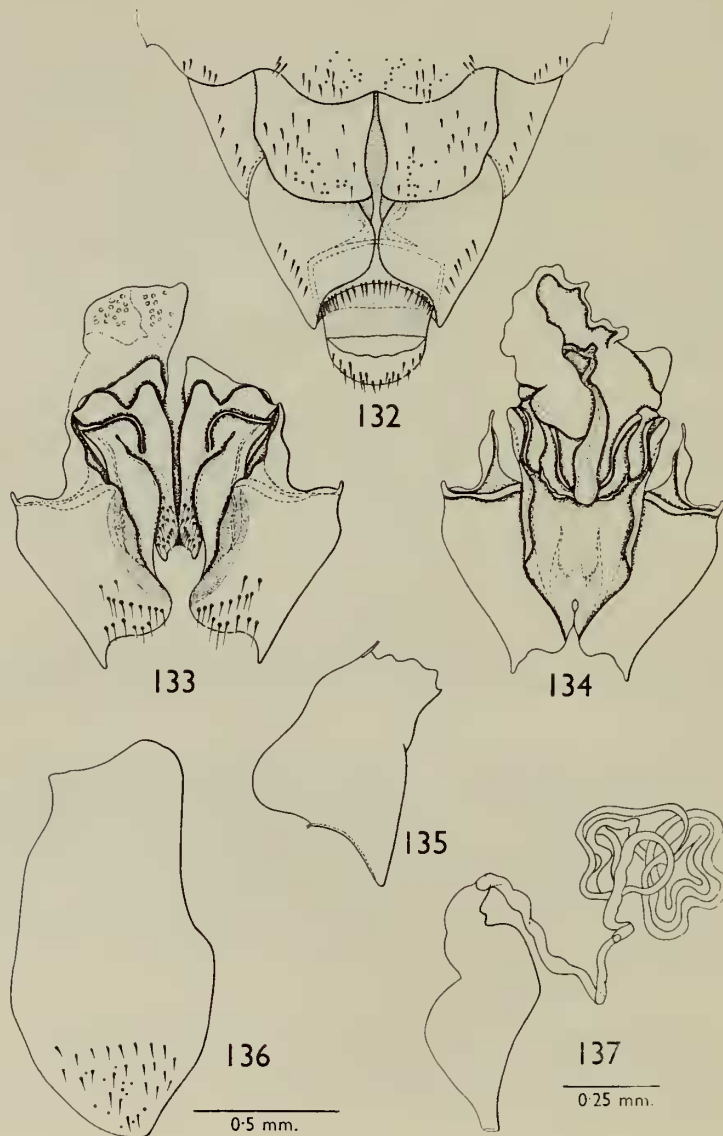
Body comparatively robust, pale, unicoloured. Head long, more than a third as long again as broad; occipital suture medially "V"-shaped, arms curving outwards towards sides; paratype long, more than a third as long as head, thicker at bases and rounded at apices. Antennae pale, with apices of second, third and apical three-quarters of fourth segments brownish black. Rostrum short, hardly reaching apices of second coxae. Lateral black line usually represented by a black dot on sides of collar. Pronotal disc pale unicoloured, black spots on posterior angles absent. Legs with apices of femora usually tinged with red. Hemelytra usually brownish black. Abdomen with dorsum, excluding connexiva, red; venter pale ochraceous. Posterior margin of seventh abdominal tergum truncate; pygophore elongate, thicker at base and tapering posteriorly.

♂ GENITALIA: Claspers strongly curved in middle, strongly curved and pointed at apices; dorsal thecal appendages absent; ventral pair long, almost straight and rounded at apices; four left lateral conjunctival appendages as in Text-fig. 131; frontal conjunctival appendages paired, long, at least as long as or longer than first lateral conjunctival appendages; four right lateral conjunctival appendages as in Text-fig. 131; a single dorsal appendage as in Text-fig. 131.

♀. Body length, 14.5–16.0 mm., width, 2.0–2.1 mm. Head length, 1.8–2.0 mm., width, 1.3–1.5 mm. (only paratype 0.6–0.7 mm.). Antennae, segment I, 3.1–3.8 mm., II, 2.3–2.5 mm., III, 2.4–2.7 mm., IV, 3.9–4.2 mm. Rostrum, segment I, 1.3–1.4 mm., II, 1.3–1.4 mm., III,

0.7-0.75 mm., IV, 0.75-0.85 mm. Disc of pronotum 2.3-2.6 mm., width, 2.0-2.1 mm. Hind femora, 6.0-6.2 mm. Hind tibia, 6.5-6.7 mm. Distance between ocelli, 0.4-0.45 mm., distance between an ocellus and an eye, 0.6-0.7 mm.

Very similar but usually larger than ♂; posterior margin of seventh abdominal sternum almost an inverted "V"-shape in middle as in Text-fig. 132, large basal portion of ninth paratergite visible.



FIGS. 132-137. *Stenocoris pallida*, ♀. 132, terminalia, ventral view; 133, ovipositor, ventral view; 134, same, dorsal view; 135, first gonopophysis, ventral view; 136, first gonocoxa, ventral view; 137, spermatheca.

♀ GENITALIA : First gonocoxae largely concealed by seventh abdominal sternum, outer margin irregular ; intervalvular sacs absent ; spermatheca irregular, pelican-shaped with a long, thick and coiled tube.

Type material. Holotype ♂, UGANDA : between Mitiana and Entebbe, 3,800 ft., 9-11.i. (S. A. Neave), B.M.(N.H.) ; allotype ♀, and paratypes, 4 ♂, 1 ♀, with same data as holotype, B.M.(N.H.) ; KENYA : Shimba, 4 ♂, 3 ♀, vii.1912 (A. D. Milne), B.M.(N.H.) ; NYASALAND : Zomba, Mlanje, Mimosa, 3 ♂, 3 ♀, iv.1962, 7.xi.1913, 10.v.1919, B.N.(M.H.) ; Zomba, Mlanje, 2,300 ft., lower Shire valley, near Chikawa, 600 ft., 15.viii., 5.ix., 7.xi.1913, 16.iv.1910, 13.vi., vii.1912 (various collectors), B.M.(N.H.) ; ZANZIBAR : 1 ♂, 1.ii.1925 (H. J. Shell), B.M.(N.H.) ; KENYA : Mazimosa, Tayari, 1 ♂, 9.ii. (B. Elbon), B.M.(N.H.) ; UGANDA : S. E. Shore of L. Kiaja, 2,400 ft., Entebbe, 3 ♂, 2 ♀, 11.viii.1911, 14-25.v.1912 (S. A. Neave, C. C. Gowdey), B.M.(N.H.).

Other material. KENYA : 3 ♂, 4 ♀ ; TANGANYIKA : 10 ♂, 13 ♀ ; UGANDA : 4 ♂, 2 ♀.

This is an East African species. Its range extends in the south into Nyasaland and in the north into Kenya. It has not been reported from central or western Africa. The adults have been collected mainly between April and November, but 2 ♂ were collected from Zanzibar and Kenya in February.

This species is closest to *S. phthisica* (Gerstäcker) but can be separated from it by the paraclypeae, which are thicker at base and thinner and rounded at apices in this species (Text-fig. 129), whilst they are thicker in the middle in *phthisica* (Text-fig. 140). The lateral black line in the form of a black dot on either side of collar and lack of black spots on the posterior angles of pronotum separate it from all the other species of the subgenus *Stenocoris*.

Stenocoris (Stenocoris) phthisica (Gerstäcker) comb. n.

(Text-figs. 138-147)

Leptocorisa phthisica Gerstäcker, 1873 : 406

Leptocorixa (Stenocoris) annulicornis Signoret ; Blöte, 1937 : 289 **syn. n.**

Leptocorixa (Stenocoris) blotei Villiers, 1963 : 232 **syn. n.**

Characterized by long paraclypeae, which are thicker only in the middle and are rounded at apices (Text-fig. 140) and by the form of ♂ and ♀ genitalia.

♂. Body length, 13.5-15.0 mm., width, 1.8-2.0 mm. Head length, 1.7-1.9 mm., (head exposed 2.0-2.1 mm.), width, 1.2-1.3 mm. (only paraclypeae 0.66-0.7 mm.). Antennae, segment I, 3.6-3.9 mm., II, 2.6-2.7 mm., III, 2.7-2.75 mm., IV, 4.0-4.1 mm. Rostrum, segment I, 1.1-1.4 mm., II, 1.1-1.4 mm., III, 0.6-0.7 mm., IV, 0.7-0.75 mm. Pronotum, length, 2.1-2.4 mm., width, 1.8-2.0 mm. Hind femora, 5.9-6.7 mm. Hind tibia, 6.3-6.9 mm. Distance between ocelli, 0.4-0.5 mm., distance between an ocellus and an eye, 0.66-0.7 mm.

Body linear, pale unicolourous. Head long, about half as long again as broad ; occipital suture medially concave, arms following straight towards sides ; paraclypeae long, about two-fifths of entire head, thicker in middle and thinner at bases and apices, apices rounded (Text-fig. 140). Antennae brownish black with underside of basal segment, middle of second and third and bases of apical segments pale. Rostrum short, reaching second coxae. Lateral black line faint, usually extending from sides of antenniferous tubercles on to anterior of propleuron.

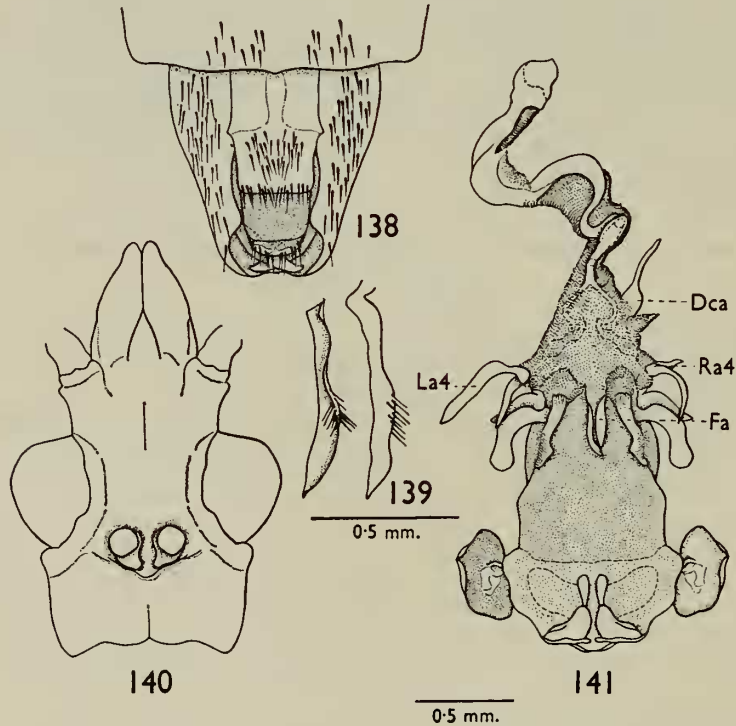
Pronotal disc pale unicoloured, black spots on posterior angles sometimes present. Legs with apices of femora and bases of tibiae tinged with red. Hemielytra tinged brownish black. Abdomen with dorsum tinged with light brown, venter pale ochraceous. Posterior margin of seventh abdominal tergum truncate, pygophore elongated, thinner in middle, posterior margin emarginate (Text-fig. 138).

♂ GENITALIA : Claspers long, uniformly thin and rounded at apices (Text-fig. 139) ; dorsal thecal appendages absent ; ventral pair thinner at bases, thick and rounded at apices ; four left lateral conjunctival appendages as in Text-fig. 141 ; frontal conjunctival appendages paired, comparatively short and thick, left uniformly thin and curved ; four right lateral conjunctival appendages as in Text-fig. 141 ; dorsal appendage as in Text-fig. 141.

♀. Body length, 15.5–16.0 mm., width, 2.1–2.2 mm. Head length, 1.8–2.0 mm., width, 1.3–1.35 mm. Antennae, segment I, 3.5–3.6 mm., II, 2.3–2.4 mm., III, 2.4–2.5 mm., IV, 3.9–4.1 mm. Rostrum, segment I, 1.3–1.4 mm., II, 1.4–1.5 mm., III, 0.7–0.8 mm., IV, 0.75–0.8 mm. Pronotum, length, 2.3–2.6 mm., width, 2.1–2.2 mm. Hind femora, 6.0–6.3 mm. Hind tibia, 6.3–6.6 mm. Distance between ocelli, 0.4–0.5 mm., distance between an ocellus and an eye, 0.66–0.7 mm.

Very similar to ♂ in general appearance and colour but usually larger ; posterior margin of seventh abdominal sternum with "U"-shaped indentation in the middle and curved towards extremities as in Text-fig. 142.

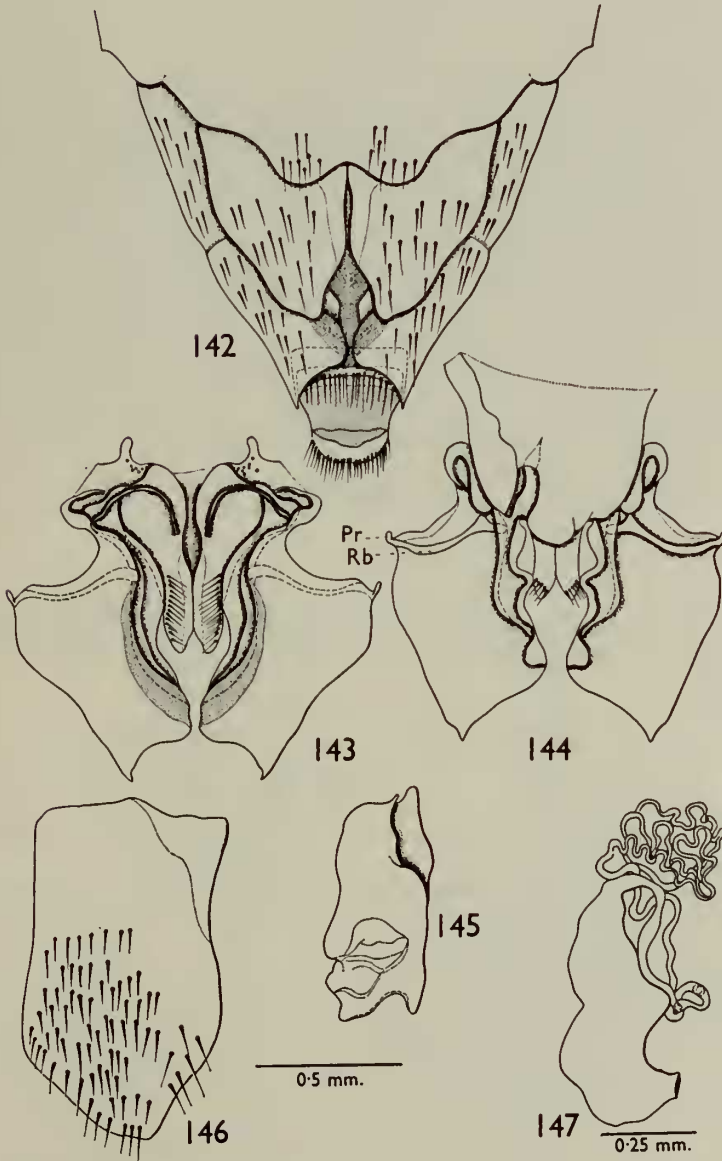
♀ GENITALIA : First gonocoxae with outer margin irregular, apices rounded (Text-fig. 146), almost triangular in external view ; intervalvular sacs absent ; spermatheca irregular, thicker in middle, with a long and coiled tube of varying thickness (Text-fig. 147).



FIGS. 138–141. *Stenocoris phthisica*, ♂. 138, terminalia, dorsal view ; 139, claspers, inner and outer views ; 140 head, dorsal view ; 141, aedeagus (inflated), ventral view.

Type material. Holotype ♂, EAST AFRICA : Mbaramu (*V. I. Deck*), Humboldt. Univers. Berlin ; cotype ♂, without data, Humboldt. Univers. Berlin.

Other material. CONGO : 12 ♂, 8 ♀ ; TANGANYIKA : 6 ♂, 3 ♀ ; KENYA : 6 ♂, 6 ♀ ; SEYCHELLES : 1 ♂ ; MAURITIUS : 1 ♂.



FIGS. 142-147. *Stenocoris phthisica*, ♀. 142, terminalia, ventral view ; 143, ovipositor, ventral view ; 144, same, dorsal view ; 145, first gonopophysis, ventral view ; 146, first gonocoxa, ventral view ; 147, spermatheca.

This species is distributed in eastern and central Africa. Its range extends in the east into Mauritius and Seychelles and in the west into Congo, Central Africa. Adults have been collected during March to August.

This species is close to *S. maculosa* (Blöte), *S. pallida* (Blöte), and *S. africana* sp. n. but can easily be separated from them by paraclypeae which are long, thicker in the middle, and very thin and rounded at apices.

Blöte redescribed *Leptocoris* *annulicornis* Signoret, 1860 (now *Stenocoris* (*Erbula*) *annulicornis*) and placed it under the subgenus *Stenocoris*. Villiers showed that Blöte had misidentified Signoret's species and suggested that *annulicornis* Blöte nec Signoret from Seychelles was a new species and named it *blotei*. It has not been possible to borrow types of *L. (S.) blotei* for the present study, but ♂ specimens (with Blöte's det. label) from Mauritius and Seychelles in the B.M.(N.H.) have been examined. The structure of the aedeagus shows that *L. blotei* is a synonym of *S. phthisica* (Gerstäcker). However ♀ specimens from Seychelles : Mahe, 5.12.1905, leg. J. S. Gardiner (B.M.(N.H.)) also seen by Blöte are in fact true *annulicornis* and this would appear to apply also to the supposed ♀ of *L. (S.) blotei* figured by Villiers (1963 : 232). The posterior margin of seventh abdominal sternum is produced in the middle and the posterior margin of this projection is slightly concave in the middle, which is characteristic of the subgenus *Erbula*.

Stenocoris (Stenocoris) sordida (Blöte) comb. n.

(Text-figs. 148-156)

Leptocorixa (Stenocoris) sordida Blöte, 1937 : 292 ; Villiers, 1955 : 1143, 1144, 1963 : 232

Characterized by prominent, pointed posterior processes of pygophore, rounded processes of posterior margin of ♀ seventh abdominal sternum and by the form of ♂ and ♀ genitalia.

♂. Body length, 12.5-15.0 mm., width, 2.1-2.5 mm. Head length, 1.6-2.1 mm., width, 1.3-1.5 mm. Antennae, segment I, 3.5-3.8 mm., II, 2.3-2.5 mm., III, 2.31-2.5 mm., IV, 4.0-4.2 mm. Rostrum, segment I, 1.4-1.6 mm., II, 1.4-1.6 mm., III, 0.7-0.9 mm., IV, 0.7-0.9 mm. Pronotum, length, 2.3-2.7 mm., width, 2.1-2.5 mm. Hind femora, 5.8-6.0 mm. Hind tibia, 6.0-6.5 mm. Distance between ocelli, 0.4-0.5 mm. ; distance between an ocellus and an eye, 0.65-0.8 mm.

Body comparatively robust, pale, tinged with black. Head usually slightly longer than broad ; occipital suture medially concave, curving outwards towards sides ; paraclypeae comparatively short, thinner at base and rounded at apices. Antennae dark brown, with underside of basal segment and bases of the apical segments pale. Rostrum long, usually reaching halfway between apices of second and bases of third coxae. Lateral black line well represented from genae on to anterior of propleuron. Pronotal disc pale, posteriorly with black punctures, posterior angles with smooth black spots. Legs with apices of femora brown, tibiae and tarsi tinged with brownish black. Hemelytra with black punctures. Abdomen with dorsum, excluding connexiva, brown, venter pale ochraceous. Posterior margin of seventh abdominal tergum truncate ; pygophore large (Text-fig. 148), posterior processes prominent, acutely pointed, posterior margin less than half of posterior margin of seventh abdominal tergum.

♂ GENITALIA : Claspers strongly curved and acutely pointed at apices ; dorsal thecal

appendages absent ; ventral pair thicker at base and very thin and rounded at apices ; four left conjunctival appendages as in Text-fig. 150 ; frontal conjunctival appendages paired, left slightly longer and straighter ; four right lateral conjunctival appendages as in Text-fig. 150 ; a pair of dorsal conjunctival appendages as in Text-fig. 150 without second spine-like appendage.

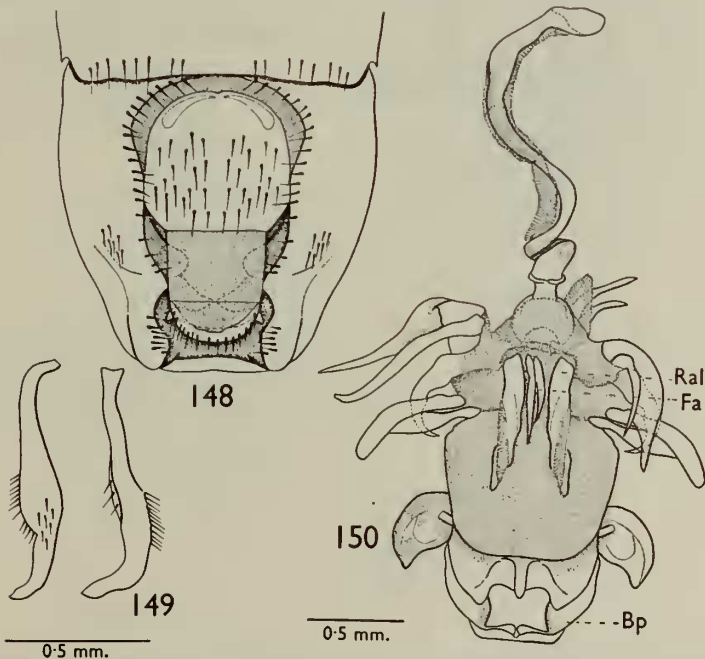
♀. Very similar to ♂ in general appearance, colour and measurements ; posterior margin of seventh abdominal sternum medially strongly indented, forming rounded processes on either side (Text-fig. 151).

♀ GENITALIA : First gonocoxae not concealing a large portion of ninth paratergite, rounded at apices ; intervalvular sacs absent ; spermatheca broad, curved, with a short coiled tube.

Type material. Holotype ♂, UGANDA : Entebbe, xii.1912 (C. C. Gowdey), B.M.(N.H.) ; allotype ♀ and paratypes, 1 ♂, 2 ♀, with same data as holotype, B.M.(N.H.) ; shores of L. Isolt or Wanala, 3,800 ft., 1 ♀, 7-8.i.1912 (S. A. Neave), B.M.(N.H.) ; Bugma Forest, Ruwenzori Range, 6,500 ft., Kimbe, Tero Forest, Semliki Plain, near south shore of L. Albert, 2,200 ft., 4 ♂, 4 ♀, ii, vii, ix, xii.1912, i.1913 (various collectors), B.M.(N.H.).

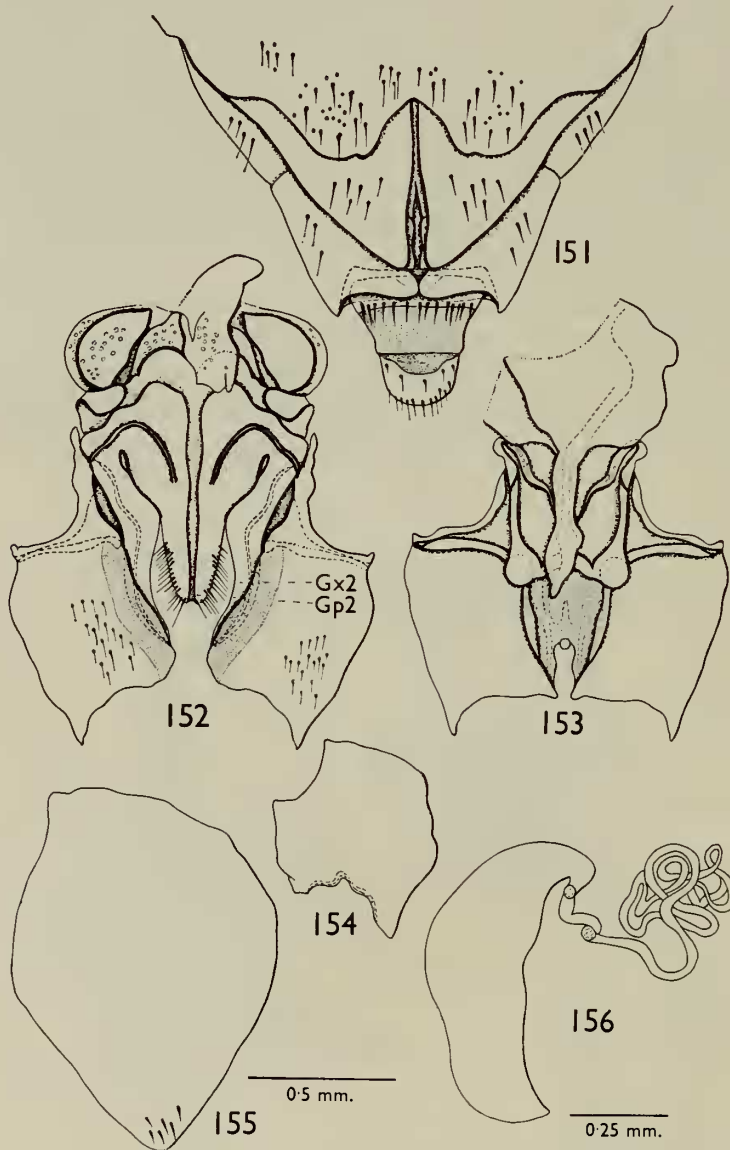
Other material. SIERRA LEONE : 4 ♂, 1 ♀ ; GHANA : 4 ♂, 1 ♀ ; NIGERIA : 1 ♀ ; CAMEROONS : 1 ♂ ; CONGO : 155 ♂, 141 ♀ ; UGANDA : 2 ♂, 1 ♀.

This is a West African species. Its range extends in the east into central Africa, Congo and East Africa, Uganda and in the west into Sierra Leone. Adults have been collected in every month of the year but it seems that it is abundant in the months of April and May.



FIGS. 148-150. *Stenocoris sordida*, ♂. 148, terminalia, dorsal view ; 149, claspers, inner and outer views ; 150, aedeagus (inflated), ventral view.

S. (S.) apicalis (Westwood) is its closest ally, from which it can be separated by the lateral black line, which is well represented on genae and extends beyond sides of collar, whereas in *S. apicalis* this line is faint on genae. The posterior margin of the pygophore is comparatively narrow and the processes formed by median indentation of ♀ seventh abdominal sternum are rounded in this species, whereas they are triangular in *S. apicalis*.



FIGS. 151-156. *Stenocoris sordida*, ♀. 151, terminalia, ventral view; 152, ovipositor, ventral view; 153, same, dorsal view; 154, first gonopophysis, ventral view; 155, first gonocoxa, ventral view; 156, spermatheca.

Stenocoris (Stenocoris) tipuloides (Degeer) comb. n.

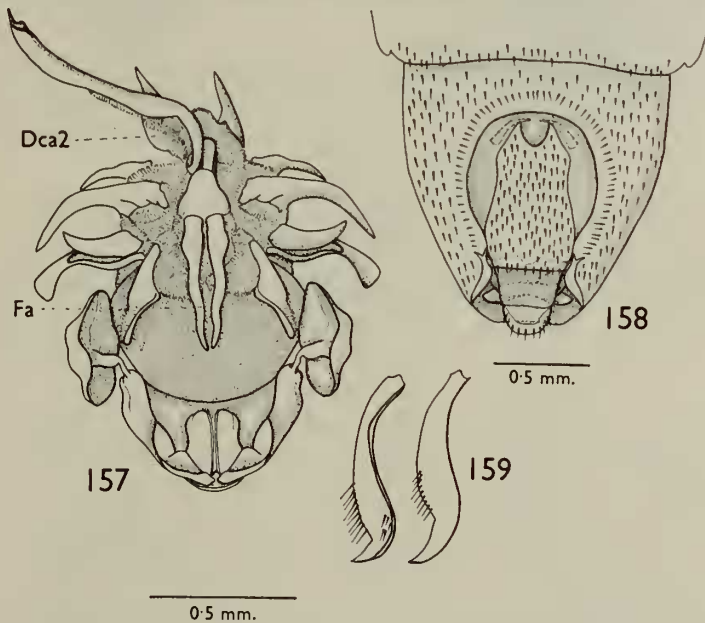
(Text-figs. 157-165)

Cimex tipuloides Degeer, 1773 : 354, 1778 : 272 ; Gmelin, 1788 : 2194*Myodocha tipuloides* (Degeer) Latreille, 1807 : 126 ; Olivier, 1811 : 106 ; Burmeister, 1835 : 325*Stenocoris tipuloides* (Degeer) Burmeister, 1839 : 1010*Leptocorisa tipuloides* (Degeer) Amyot et Serville, 1843 : 229*Gerris tipuloides* (Degeer) Stål, 1870 : 218*Leptocorixa tipuloides* (Degeer) Hussey, 1951 : 152*Leptocorisa crudelis* Westwood, 1842 : 18

Characterized by the round pygophore, the posterior margin of which is medially emarginate and by the form of ♂ and ♀ genitalia.

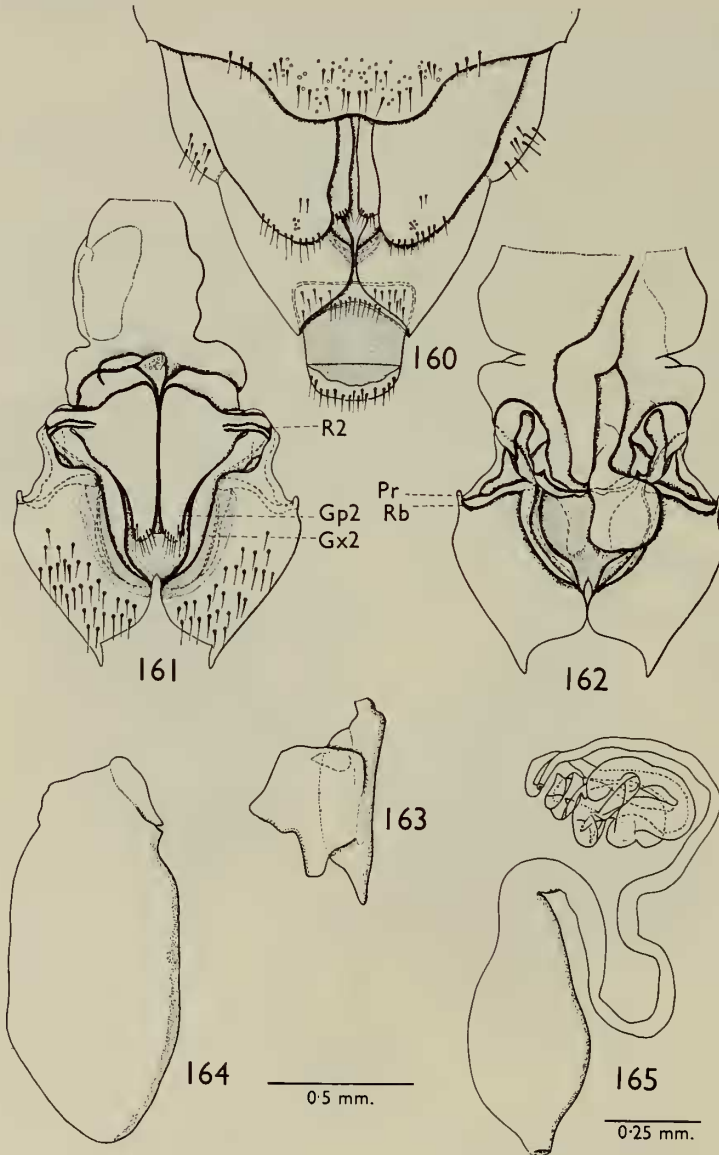
♂. Body length, 14.0-15.5 mm., width, 2.1-2.2 mm. Head length, 1.9-2.0 mm., width, 1.3-1.4 mm. (length of paraclypeae 0.70 mm.). Antennae, segment I, 3.3-3.7 mm., II, 2.3-2.6 mm., III, 2.4-2.7 mm., IV, 4.0-4.2 mm. Rostrum, segment I, 1.3-1.5 mm., II, 1.4-1.5 mm., III, 0.7-0.8 mm., IV, 0.75-0.8 mm. Pronotum, length, 2.4-2.7 mm., width, 2.1-2.2 mm. Hind femora, 6.0-6.7 mm. Hind tibia, 6.4-6.9 mm. Distance between ocelli, 0.5-0.6 mm., distance between an ocellus and an eye, 0.66-0.7 mm.

Body comparatively robust, pale, tinged with light brown. Head slightly tapering behind occipital suture, about half as long again as broad ; occipital suture medially "U"-shaped, with arms bending outwards towards margins of head ; paraclypeae long, more than one-third length of head, uniformly thin and rounded at apices. Antennae pale, usually tinged with pink. Rostrum short, never extending beyond apices of second coxae. Lateral black line



FIGS. 157-159. *Stenocoris tipuloides*, ♂. 157, aedeagus (inflated), ventral view ; 158, terminalia, dorsal view ; 159, claspers, inner and outer views.

usually faintly represented, extending from sides of antenniferous tubercles on to collar. Pronotal disc uniformly pale, black spots on posterior angles absent. Legs usually with apices of femora and bases of tibiae pink. Hemelytra tinged brownish black. Abdomen with dorsum, excluding connexiva, pink; venter pale ochraceous. Posterior margin of seventh abdominal tergum truncate; pygophore rounded, smoothly tapering posteriorly, posterior margin medially emarginate (Text-fig. 158).



FIGS. 160-165. *Stenocoris tipuloides*, ♀. 160, terminalia, ventral view; 161, ovipositor, ventral view; 162, same, dorsal view; 163, first gonopophysis, ventral view; 164, first gonocoxa, ventral view; 165, spermatheca.

♂ GENITALIA : Claspers thicker at bases, strongly curved in middle (Text-fig. 159) ; dorsal thecal appendages absent ; ventral pair long, thicker at bases, very thin and truncated at apices ; four pairs of lateral conjunctival appendages as in Text-fig. 157 ; frontal conjunctival appendages, paired, long, curved in middle, not at all curved at apices, dorsal appendages as in Text-fig. 157.

♀. Body length, 15.0-16.0 mm., width, 2.2-2.3 mm. Head length, 1.9-2.0 mm., width, 1.3-1.4 mm. (only paraclypeae 0.70 mm.). Antennae, segment I, 3.0-3.1 mm., II, 2.1-2.3 mm., III, 2.3-2.4 mm., IV, 3.6-3.9 mm. Rostrum, segment I, 1.3-1.5 mm., II, 1.4-1.5 mm., III, 0.7-0.8 mm., IV, 0.75-0.85 mm. Pronotum, length, 2.6-2.7 mm., width, 2.2-2.3 mm. Hind femora, 5.9-6.3 mm. Hind tibia, 6.1-6.4 mm. Distance between ocelli, 0.5-0.56 mm., distance between an ocellus and an eye, 0.66-0.7 mm.

Slightly larger than ♂ ; posterior margin of seventh abdominal sternum slightly notched in middle, forming rounded lobes, large basal portion of eighth paratergite concealed (Text-fig. 160).

♀ GENITALIA : First gonocoxae comparatively small, outer margins sinuate and apices rounded (Text-fig. 164) ; intervalvular sacs absent ; spermatheca flask-shaped with a curved long neck and uniformly thick coiled tube (Text-fig. 165).

Type material. Holotype without data, Riksmus. Stockholm. Holotype ♀, of *Leptocoris crudelis* Westwood, without data, Hope Dept., Univ. Mus., Oxford.

Other material. U.S.A. : 2 ♀ ; BRAZIL : 5 ♂, 5 ♀ ; COLOMBIA : 2 ♂ ; MEXICO : 3 ♂, 5 ♀ ; BRITISH GUIANA : 1 ♂ ; PANAMA : 8 ♂, 5 ♀ ; ECUADOR : 2 ♂, 2 ♀ ; CUBA : 1 ♀ ; PARAGUAY : 1 ♂, 1 ♀.

This species is very common in the northern Neotropical region, its range extending in the north into Texas and Florida, and in the south into Brazil. Adults have been collected throughout the year but it seems to be more common in April, May, and June.

This species is closest to *S. americana* sp. n., from which it can be separated by a short rostrum, which never extends beyond apices of second coxae and by the frontal conjunctival appendages of the aedeagus.

Stenocoris (Stenocoris) v-nigrum (Blöte) comb. n.

(Text-figs. 166-174)

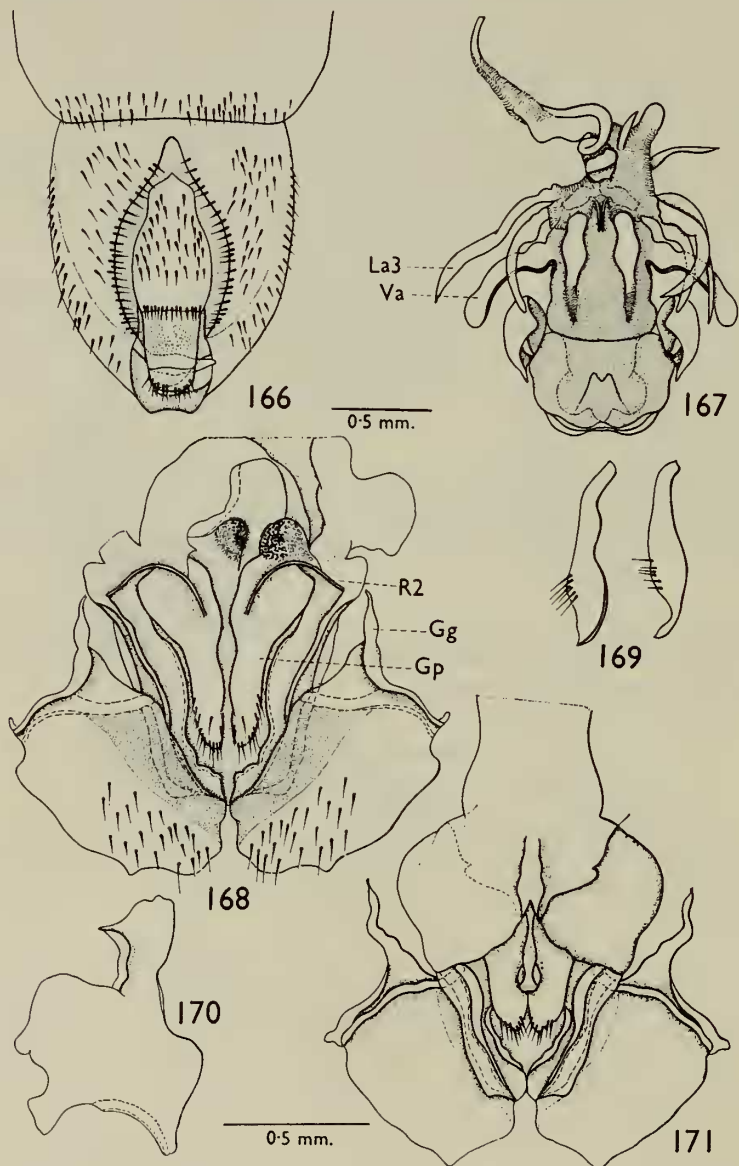
Leptocorixa (Stenocoris) v-nigrum Blöte, 1937 : 293 ; Villiers, 1955 : 1142, 1144, 1963 : 232

Characterized by long rostrum, which approaches third coxae and by the form of ♂ and ♀ genitalia.

♂. Body length, 14.0-15.5 mm., width, 2.1-2.25 mm. Head length, 1.9-2.25 mm., width, 1.5-1.6 mm. (only paraclypeae 0.6-0.7 mm.). Antennae, segment I, 3.7-3.8 mm., II, 2.7-2.9 mm., III, 2.8-3.0 mm., IV, 3.7-3.9 mm. Rostrum, segment I, 1.65-1.75 mm., II, 1.7-2.0 mm., III, 0.8-0.9 mm., IV, 0.8-1.0 mm. Pronotum length, 2.3-2.5 mm., width, 2.1-2.25 mm. Hind femora, 5.0-6.0 mm. Hind tibia, 6.4-6.6 mm. Distance between ocelli, 0.4-0.5 mm., distance between an ocellus and an eye, 0.7-0.8 mm.

Body comparatively robust, pale, tinged with black. Head about a third as long again as broad ; occipital suture "V"-shaped in middle, arms continuing straight towards sides ; paraclypeae about one-third of head length, uniformly thick and rounded at apices. Antennae brownish black, tinged with red, underside of basal segment, articulation between first and second segment, middle of second and at least basal third of apical segment pale. Rostrum long, usually reaching anterior margin of third coxae. Lateral black line well represented on

genae, extending on to collar. Pronotal disc pale, posteriorly with brownish black punctures, black spots on posterior angles present. Legs pale, with apices of femora, tibiae and tarsi brownish. Hemelytra tinged with black. Abdomen with dorsum, excluding connexiva, red, venter pale unicolourous. Posterior margin of seventh abdominal tergum truncate; pygophore large, tapering posteriorly, posterior margin truncate (Text-fig. 166).



FIGS. 166-171. *Stenocoris v-nigrum*, 166, ♂ terminalia, dorsal view; 167, aedeagus (inflated), ventral view; 168, ovipositor, ventral view; 169, ♂ claspers, inner and outer views; 170, ♀ first gonopophysis, ventral view; 171, ovipositor, dorsal view.

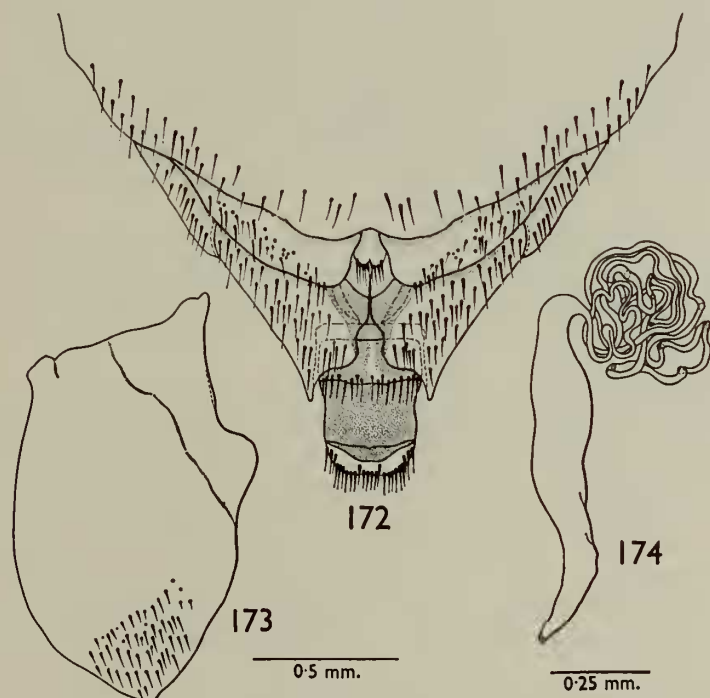
♂ GENITALIA : Claspers thicker in middle with thin and curved apices (Text-fig. 169) ; dorsal thecal appendages absent ; ventral pair long, uniformly thick, slightly curved in middle and rounded at apices ; four left lateral conjunctival appendages as in Text-fig. 167 ; frontal conjunctival appendages paired, minute, reduced to spines, four right lateral conjunctival appendages as in Text-fig. 167 ; dorsal appendages as in Text-fig. 167.

♀. Body length, 15.2–16.6 mm., width, 2.2–2.6 mm. Head length, 2.0–2.4 mm., width, 1.5–1.6 mm. (only paraclypeae 0.7–0.8 mm.). Antennae, segment I, 3.7–3.8 mm., II, 2.7–2.9 mm., III, 2.75–3.0 mm., IV, 3.9–4.1 mm. Rostrum, segment I, 1.6–1.8 mm., II, 1.7–1.9 mm., III, 0.9–1.0 mm., IV, 0.9–1.1 mm. Pronotum, length, 2.4–2.8 mm., width, 2.2–2.6 mm. Hind femora, 5.6–6.1 mm. Hind tibia, 6.0–6.6 mm. Distance between ocelli, 0.4–0.45 mm., distance between an ocellus and an eye, 0.7–0.75 mm.

Distinctly longer than ♂ ; posterior margin of seventh abdominal sternum almost of inverted "V"-shape in middle, forming small rounded lobes (Text-fig. 172).

♀ GENITALIA : A large portion of first gonocoxae covered by seventh abdominal sternum, apices rounded ; intervalvular sacs absent, spermatheca tubular with a thick, curved and short neck (Text-fig. 174).

Type material. Holotype ♂, UGANDA : Southern Toro, Mbarara, Fort Portal Road, 3,800–4,200 ft., 22–24.x.1911 (S. A. Neave), B.M.(N.H.) ; allotype ♀, 1 paratype ♂, same data as holotype, B.M.(N.H.) ; paratypes, Toro or Doro Forest, 4,000–4,500 ft., 1 ♂, 25–29.x.1911 (S. A. Neave), B.M.(N.H.) ; Western Ankola, 4,500–5,000 ft., 1 ♀, 10–14.x.1911 (S. A. Neave), B.M.(N.H.).



FIGS. 172–174. *Stenocoris v-nigrum*, ♀. 172, terminalia, ventral view ; 173, first gonocoxa, ventral view ; 174, spermatheca.

Other material. CONGO : 10 ♂, 9 ♀ ; GHANA : 2 ♂, 1 ♀ ; TANGANYIKA : 10 ♂, 12 ♀.

The range of this species extends in the west into Ghana and in the east into Tanganyika, but this seems to be more common in eastern Africa. Adults have been collected mainly in April and May.

This species is isolated in the subgenus *Stenocoris* s. str. by the characters of long rostrum, which approaches third coxae, greatly reduced frontal conjunctival appendages in the aedeagus and by tubular spermatheca.

***STENOCORIS (ORYZOCORIS)* subgen. n.**

Leptocorisa Latreille 1829 ; Laporte, 1833 : 25 ; Stål, 1873 : 87

Leptocorixa Laporte ; Hussey, 1951 : 152

Type-species : *Cimex filiformis* Fabricius by monotypy.

Body linear. Head elongated, almost half as long again as broad ; paraclypeae short, straight and rounded at apices ; ocelli wide apart, interocellar distance only slightly shorter than distance between an ocellus and an eye (in both cases including the diameter of both). Antennae with apical segment pale only at base, second subequal to third. Rostrum very short, hardly approaching second coxae. Lateral black line usually entirely absent, sides of head and thorax pale. Pronotum flat with latero-posterior tips usually pale but sometimes brownish black. Abdomen dorsally yellowish red, abdomen ventrally usually pale unicoloured.

In ♂, posterior margin of seventh abdominal tergum truncated ; pygophore elongated, laterally posterior tips acutely pointed ; claspers asymmetrically crossed over pygophore, curved in the middle and strongly pointed at apices ; aedeagus with only ventral pair of thecal appendages, dorsal pair wanting ; frontal conjunctival appendages paired, very small ; membranous appendage rounded with paired dorsal appendages, terminal appendage absent. In ♀, posterior margin of seventh abdominal sternum with short median split ; first gonocoxae small, almost truncated at apices ; intervalvular sacs absent ; spermatheca very large oval, with a short coiled tube of varying thicknesses.

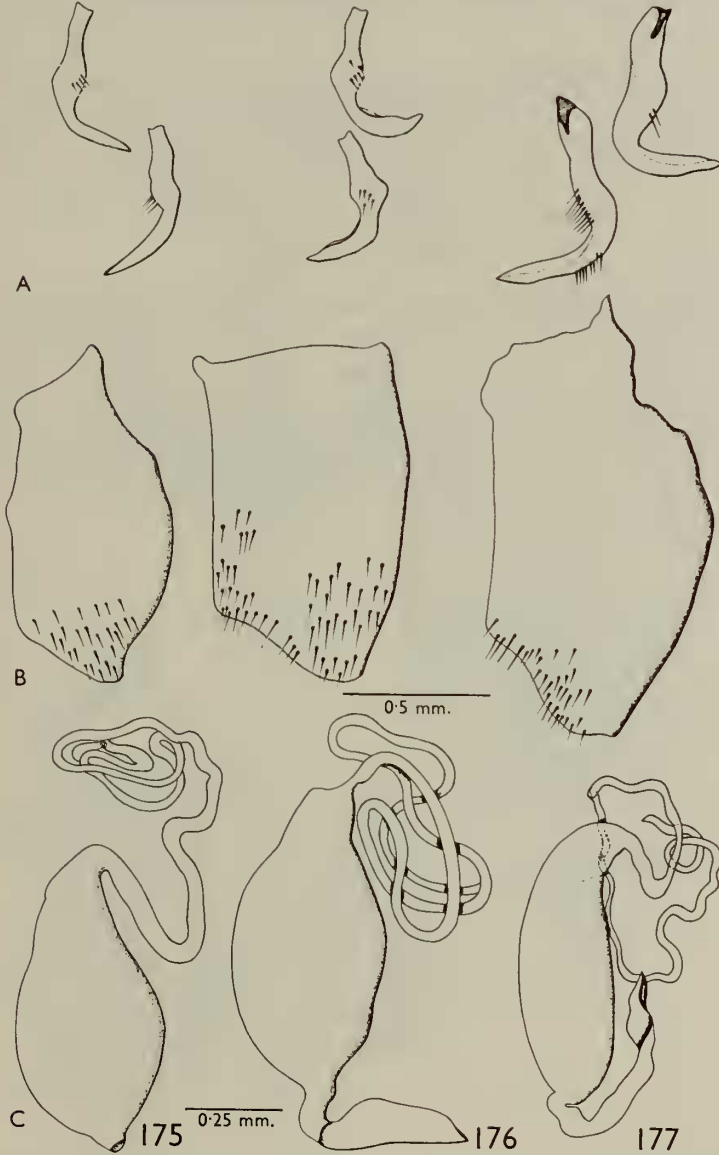
This subgenus can be separated from other subgenera, in the ♂ by the claspers which, at rest, are always crossed over the pygophore and are not in a socket (Text-fig. 178) and in the ♀ by the posterior margin of seventh abdominal sternum, which is always with a short median split (Text-fig. 181).

Laporte described *Leptocorisa* and included *linearis* (Nearctic and Neotropical) (= *filiformis* Fabricius) but in 1830 Guérin had already described his *flavida* (Oriental) (= *acuta* Thunberg **syn. n.**) under *Leptocorisa* Latreille. This was the first redescription of *Leptocorisa* Latreille, 1829 and *flavida*, the first and only species ever included in the genus, became the type-species of *Leptocorisa* Latreille by monotypy. Stål divided *Leptocorisa* into four subgenera as follows : (1) *Rhabdocoris* Kolenati, 1845 ; (2) *Stenocoris* Burmeister, 1839 ; (3) *Erbula* Stål, 1873 ; (4) *Leptocorisa* Laporte s. str. During the present study *Rhabdocoris* Kolenati (type-species *arcuata* Kolenati, 1845) has been synonymized with *Leptocorisa* Latreille and all the Oriento-Australian species (previously described under subgenus *Rhabdocoris*) have been separated from other Ethiopian, Nearctic and Neotropical species. *Stenocoris* being the senior subgenus has been given generic rank and *Leptocorisa* Laporte (a hitherto undescribed subgenus) has been described here as *Oryzocoris*.

KEY TO SPECIES

- 1 Median longitudinal red line on ventral abdominal segments present, sometimes faint ; pygophore with posterior processes rounded and pointing posteriorly (Text-fig. 195) ; basal portions of eighth paratergites largely visible (Text-fig. 192)

furcifera (p. 67)



FIGS. 175-177. *Stenocoris* (*Oryzocoris*) spp. 175, *filiformis* ; 176, *furcifera* ; 177, *fabricii*. A, claspers, outer and inner views ; B, first gonacoxa, ventral view ; C, spermatheca.

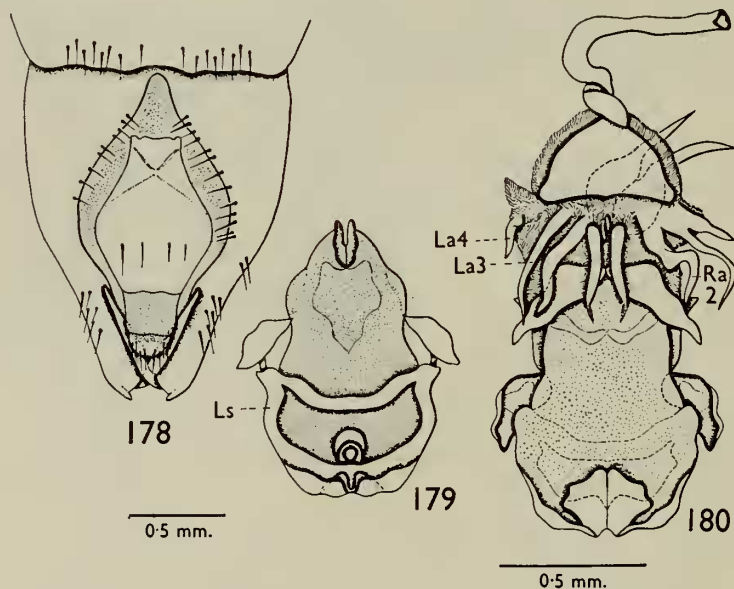
- Median longitudinal red line absent ; pygophore with posterior processes pointed and facing each other (Text-fig. 185) ; basal portions of eighth paratergites largely concealed by first pair of gonocoxae (Text-fig. 181) 2
- 2 Pygophore greatly elongated, posterior margin very narrow, about one-sixth of posterior margin of seventh abdominal tergum (Text-fig. 178) ; lobes of ♀ seventh abdominal sternum with posterior margin medially concave (Text-fig. 181). (Second right lateral conjunctival appendage of aedeagus sickle-shaped (Text-fig. 180))
- Pygophore almost rectangular, posterior margin broad, more than half of posterior margin of seventh abdominal tergum (Text-fig. 185) ; lobes of ♀ seventh abdominal sternum with convex posterior margin (Text-fig. 187). (Second right lateral conjunctival appendage of aedeagus almost straight (Text-fig. 186)). *fabricii* (p. 62)
- filiformis* (p. 64)

Stenocoris (Oryzocoris) fabricii sp. n.

(Text-figs. 177–184)

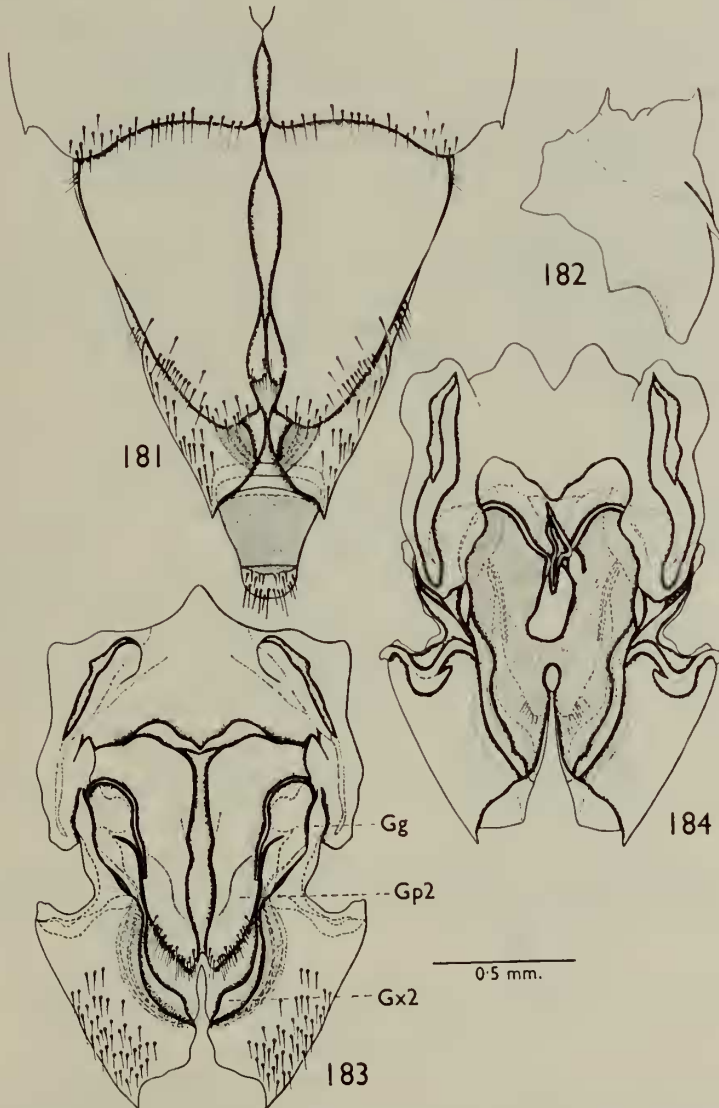
Characterized by extremely narrow posterior margin of pygophore, by the triangular form of first gonocoxae and by other ♂ and ♀ genital characters.

♂. Body length, 14.5–15.06 mm., width, 2.0–2.1 mm. Head length, 1.8–1.9 mm. (paraclypeae only, 0.5–0.55 mm.), width, 1.4 mm. Antennae, segment I, 3.6–3.73 mm., II, 2.0–2.26 mm., III, 2.1–2.4 mm., IV, 4.0–4.4 mm. Rostrum, segment I, 1.33 mm., II, 1.33 mm., III, 0.66 mm., IV, 0.66 mm. Pronotum, length, 2.4–2.5 mm., width, 2.0–2.1 mm. Hind femora, 5.46–5.6 mm. Hind tibia, 5.73–6.0 mm. Distance between ocelli, 0.46 mm., distance between an ocellus and an eye, 0.7 mm.



FIGS. 178–180. *Stenocoris (Oryzocoris) fabricii*, ♂. 178, terminalia, dorsal view ; 179, theca, dorsal view ; 180, aedeagus (inflated), ventral view.

Body comparatively robust, pale. Head never half as long again as broad; occipital suture medially concave, arms bending inwards towards sides; paraclypeae short, about one-third of head, straight and of uniform thickness. Antennae with underside of basal segment pale, above black; second and third grey, second slightly shorter than third, fourth tinged with red, pale only at base. Rostrum comparatively long, reaching apices of second coxae. Lateral black line faint, extending from sides of antenniferous tubercles on to collar. Pronotal disc pale, posteriorly with greenish tinge, black spots on posterior angles absent. Legs pale, with



FIGS. 181-184. *Stenocoris (Oryzocoris) fabricii*, ♀. 181, terminalia, ventral view; 182, first gonopophysis, ventral view; 183, ovipositor, ventral view; 184, same, dorsal view.

femora greenish, tibiae and tarsi tinged with black. Hemelytra with anal and medial veins brownish black. Abdomen with dorsum, excluding connexiva, red, venter pale, tinged with red; median longitudinal red line absent. Posterior margin of seventh abdominal tergum sinuate, medially concave; pygophore greatly elongated, tapering posteriorly, posterior margin narrow, about one-sixth of width of posterior margin of seventh abdominal tergum; posterior processes pointed, facing each other (Text-fig. 178).

♂ GENITALIA: Claspers strongly curved in middle, acutely pointed and curved at apices (Text-fig. 177, A); dorsal thecal appendages absent; ventral pair as in Text-fig. 180; four left lateral conjunctival appendages as in Text-fig. 180; frontal conjunctival appendages paired, minute, right slightly longer; four right lateral conjunctival appendages with second sickle-shaped as in Text-fig. 180; dorsal appendages as in Text-fig. 180.

♀. Body length, 15.2–15.6 mm., width, 1.9–2.0 mm. Head length, 1.77–1.9 mm. (only paraclypeae 0.53–0.55 mm.), width, 1.33 mm. Antennae, segment I, 2.93–3.1 mm., II, 1.8–1.96 mm., III, 1.8–2.0 mm., IV, 4.0–4.2 mm. Rostrum, segment I, 1.33 mm., II, 1.33 mm., III, 0.66 mm., IV, 0.6 mm. Pronotum, length, 2.36–2.4 mm., width, 1.9–2.0 mm. Hind femora, 5.2–5.34 mm. Hind tibia, 5.32–5.6 mm. Distance between ocelli, 0.46 mm., distance between an ocellus and an eye, 0.7 mm.

Very similar to ♂ in general appearance; seventh abdominal sternum with a short median split, forming a lobe on either side; lobes with concave posterior margins (Text-fig. 181).

♀ GENITALIA: First gonocoxae large, concealing eighth paratergites, triangular, apices facing each other (Text-fig. 181); intervalvular sacs absent; spermatheca oval, with a smoothly curved neck and a short coiled tube (Text-fig. 177, C).

Holotype ♂, PERU: Tingo Maria, Huan, 2,200 ft., II.X.1946 (*J. C. Pallister*), A.M.N.H.

Paratypes. 1 ♂, 1 ♀, with same data as holotype, A.M.N.H., 1 ♂, without any data, from a series of *filiiformis* Fabricius in coll. Fabricius, Zool. Mus. Copenhagen; VENEZUELA: Estate of Guasualito (Guarico), Camagua, 1 ♂, 1923, (*S. Mayeul Crisol*), Mus. Hist. nat. Paris; ARGENTINA: Misiones, Erv. de San Ignacio Villa, Lutecia, 1 ♂, 1910 (*E. R. Wagner*), Chaco de Santa Fe las Garzas, near Figlas Garzas, 20 km. to Docampo, 1 ♂, 1903 (*E. R. Wagner*), Mus. Hist. nat. Paris; BRAZIL: 1 ♀, 1898 (*Noualhier*), Pernambuco, Pery, 1 ♂, 1898 (*Noualhier*), Mus. Hist. nat. Paris; BRITISH GUIANA: Georgetown, 1 ♀, 6.vii.1911, A.M.N.H.; HONDURAS: Tegucigalpa, 28.iii.1917 (*F. J. Drer*), A.M.N.H.

This species is found at high altitudes and seems to be common in Peru. Its range extends in the north into Venezuela. Adults have been collected in April and October.

This species is close to *S. (O.) furcifera* (Westwood) in general appearance but can easily be separated by the absence of red median longitudinal line on venter of abdomen.

Stenocoris (Oryzocoris) filiiformis (Fabricius) comb. n.

(Text-figs. 175, 185–190)

Cimex filiiformis Fabricius, 1775 : 727, 1781 : 375, 1787 : 308; Gmelin, 1789 : 2191

Gerris filiiformis (Fabricius) Fabricius, 1794 : 191, 1803 : 260; Stål, 1866 : 66

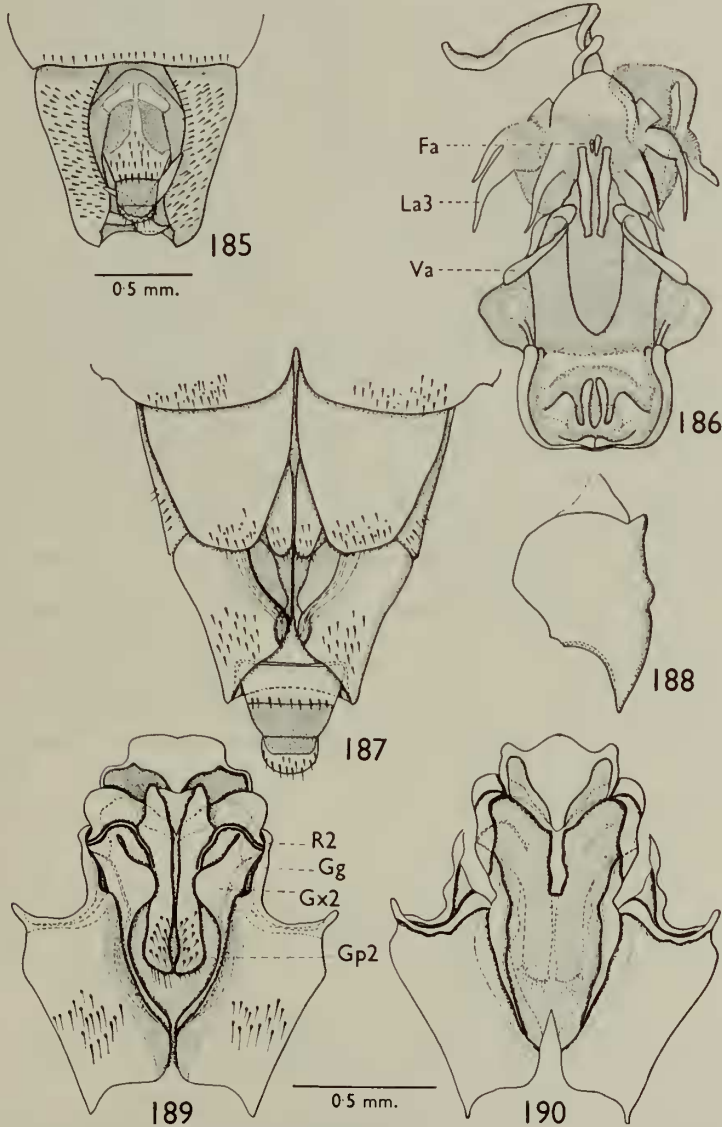
Leptocorisa (s. str.) *filiiformis* (Fabricius) Stål, 1873 : 87

Leptocorisa linearis Laporte, 1833 : 26

Leptocorisa tipuloides Dallas, 1852 : 484

Characterized by the long cylindrical paraclypeae, by almost rectangular pygophore, by convex posterior margin of the lobes of the ♀ seventh abdominal sternum and by the form of ♂ and ♀ genitalia.

♂. Body length, 14.0–15.0 mm., width, 1.8–1.9 mm. Head length, 1.9–1.8 mm. (only paraclypeae, 0.66 mm.), width, 1.3–1.4 mm. Antennae, segment I, 3.0–3.26 mm., II, 1.8–



FIGS. 185–190. *Stenocoris (Oryzocoris) filiformis*. 185–186, ♂, 187–190, ♀. 185, terminalia, dorsal view; 186, aedeagus (inflated), ventral view; 187, terminalia, ventral view; 188, first gonopophysis, ventral view; 189, ovipositor, ventral view; 190, same, dorsal view.

2.0 mm., III, 2.2-2.26 mm., IV, 3.7-4.0 mm. Rostrum, segment I, 1.2-1.3 mm., II, 1.2-1.3 mm., III, 0.6-0.66 mm., IV, 0.6-0.66 mm. Pronotum, length, 2.3-2.4 mm., width, 1.8-1.9 mm. Hind femora, 5.5-5.9 mm. Hind tibia, 5.9-6.0 mm. Distance between ocelli, 0.5-0.53 mm., distance between an ocellus and an eye, 0.66-0.7 mm.

Body medium sized, linear, usually yellowish with greenish or sometimes reddish tinge. Head comparatively broad, breadth usually less than two-thirds of length; occipital suture "V"-shaped in middle; paraclypeae long and cylindrical, more than one-third of head. Antennae usually palish brown, sometimes tinged red, second distinctly shorter than third. Rostrum, only reaching anterior margins of second coxae. Lateral black line well represented extending from sides of antenniferous tubercles on to collar. Pronotal disc pale, tinged with green, black spots on posterior angles absent. Legs with apices of femora sometimes reddish. Hemelytra with anal vein usually more prominently black than medial. Abdomen with dorsum pale unicoloured, sometimes with reddish tinge, venter pale ochraceous, red median longitudinal line absent. Posterior margin of seventh abdominal tergum truncate, pygophore curved near apex, posterior processes acutely pointed and facing each other, posterior margin broad, more than half of width of seventh abdominal tergum (Text-fig. 185).

♂ GENITALIA: Claspers irregularly crossed over pygophore, curved near apex (Text-fig. 175, A); dorsal thecal appendages absent; ventral pair as in Text-fig. 186; four left lateral conjunctival appendages as in Text-fig. 186; frontal conjunctival appendages paired, minute, right slightly thicker and longer; four right lateral conjunctival appendages, with second almost straight as in Text-fig. 186; dorsal appendages as in Text-fig. 186.

♀. Body length, 15.0-16.5 mm., width, 1.9-2.0 mm. Head length, 1.8-1.9 mm., width, 1.3-1.4 mm., (length of only paraclypeae, 0.66-0.7 mm.). Antennae, segment I, 2.56-3.1 mm., II, 1.86-2.06 mm., III, 2.2-2.26 mm., IV, 3.7-4.0 mm. Rostrum, 1.16-1.2 mm., II, 1.16-2.0 mm., III, 0.6-0.63 mm., IV, 0.6-0.63 mm. Pronotum, length 2.3-2.4 mm., width, 1.9-2.0 mm. Hind femora, 5.2-5.3 mm. Hind tibia, 5.6-5.8 mm. Distance between ocelli, 0.5-0.56 mm., distance between an ocellus and an eye, 0.6-0.63 mm.

Distinctly longer than ♂, posterior margin of seventh abdominal sternum with a short median split, forming convex lobe on either side.

♀ GENITALIA: First gonocoxae broad, concealing a large basal portion of eighth paratergite (Text-fig. 187); outer margin regular, apices rounded; intervalvular sacs absent; spermatheca flask-shaped with a distinct, smoothly curved neck as in Text-fig. 175C.

Type material. Lectotype ♂, without data ("filiformis" Fabricius' handwriting), Zool. Mus. Copenhagen; syntypes, 1 ♂, 1 ♀, with no data, Zool. Mus. Copenhagen.

Other material. MEXICO: 1 ♀; U.S.A.: 6 ♂, 10 ♀; CUBA: 1 ♂; COLOMBIA: 2 ♂, 1 ♀; BRITISH GUIANA: 2 ♂, 2 ♀; LEEWARD ISLANDS: 2 ♂, 2 ♀; BRAZIL: 21 ♂, 14 ♀.

The range of this species extends in the east into the Leeward Islands and in the west into Mexico and Gorgona Island, Colombia. It is the commonest Central American species and in the north is found in Texas and Leesburg, Florida. Adults seem to be very common in August.

This is close to *S. (O.) furcifera* (Westwood) and can be separated from it by the absence of red median longitudinal line on abdominal venter.

Four syntypes from Fabricius' collection have been examined; all except one ♂ represent the present concept of *S. (O.) filiformis* (Fabricius). One ♂ with Fabricius' own label "*filiformis*" has been designated lectotype of *Stenocoris (Oryzocoris) filiformis* (Fabricius) and has been given a lectotype label. The exceptional ♂ represents *S. (O.) fabricii* sp. n.

Stenocoris (Oryzocoris) furcifera (Westwood) comb. n.

(Text-figs. 176, 191-196)

Leptocorisa furcifera Westwood, 1842 : 18*Gerris nigricornis* Stål, 1870 : 218 syn. n.*Leptocorisa nigricornis* (Stål) Stål, 1873 : 87

Characterized by red median longitudinal line on abdominal venter and by the form of ♂ and ♀ genitalia.

♂. Body length, 14.0-16.12 mm., width, 1.8-2.0 mm. Head length, 1.9-2.0 mm., (length of paraclypeae 0.5-0.56 mm.), width, 1.3-1.4 mm. Antennae, segment I, 3.3-3.6 mm., II, 2.20-2.26 mm., III, 2.20-2.26 mm., IV, 3.7-4.0 mm. Rostrum, segment I, 1.3-1.33 mm., II, 1.3-1.33 mm., III, 0.6-0.63 mm., IV, 0.6-0.63 mm. Pronotum, length, 2.4-2.6 mm., width, 1.8-2.0 mm. Hind femora, 5.73-6.0 mm. Hind tibia, 6.5-7.1 mm. Distance between ocelli, 0.46-0.5 mm., distance between an ocellus and an eye, 0.6-0.66 mm.

Body usually greatly elongated, linear and usually pale unicolourous. Head about half as long again as broad; occipital suture medially concave, arms curving outwards towards sides; paraclypeae short, about one-third length of head, thicker at bases and thinner at apices. Antennae pale, with apices of each segment (except fourth) black, fourth light red, second and third usually subequal. Rostrum very short, usually not reaching second coxae. Lateral black line faint, extending from sides of antenniferous tubercles on to collar. Pronotal disc usually pale unicolourous, sometimes with greenish tinge posteriorly; posterior angles without black spots, although sometimes trace of brownish spot present. Legs pale unicolourous. Hemielytra with both anal and medial veins prominently black. Abdomen with dorsum, excluding connexiva, red, venter palish red with a median longitudinal red line, this line sometimes faint. Posterior margin of seventh abdominal tergum slightly medially concave; pygophore smoothly tapering posteriorly; posterior processes rounded, directed backward (Text-fig. 195).

♂ GENITALIA: Claspers crossed regularly over pygophore, not curved at apices (Text-fig. 176, A); dorsal thecal appendages absent, ventral pair as in Text-fig. 191; four left lateral conjunctival appendages as in Text-fig. 191; frontal conjunctival appendages paired, minute, almost of equal length; four right lateral conjunctival appendages, with second almost straight as in Text-fig. 191; dorsal appendages as in Text-fig. 191.

♀. Body length, 17.66-18.66 mm., width, 2.0-2.26 mm. Head length, 1.86-2.0 mm., width, 1.4-1.5 mm. Antennae, segment I, 3.3-3.73 mm., II, 2.2-2.26 mm., III, 2.2-2.26 mm., IV, 3.3-3.8 mm. Rostrum, segment I, 1.3-1.33 mm., II, 1.3-1.33 mm., III, 0.63-0.7 mm., IV, 0.63-0.7 mm. Pronotum length, 2.5-2.66 mm., width, 2.0-2.26 mm. Hind femora, 5.33-5.7 mm. Hind tibia, 6.0-6.1 mm. Distance between ocelli, 0.46-0.5 mm., distance between an ocellus and an eye, 0.66-0.7 mm.

Distinctly longer than ♂; posterior margin of seventh abdominal sternum with a median split, forming concave lobe on either side (Text-fig. 192).

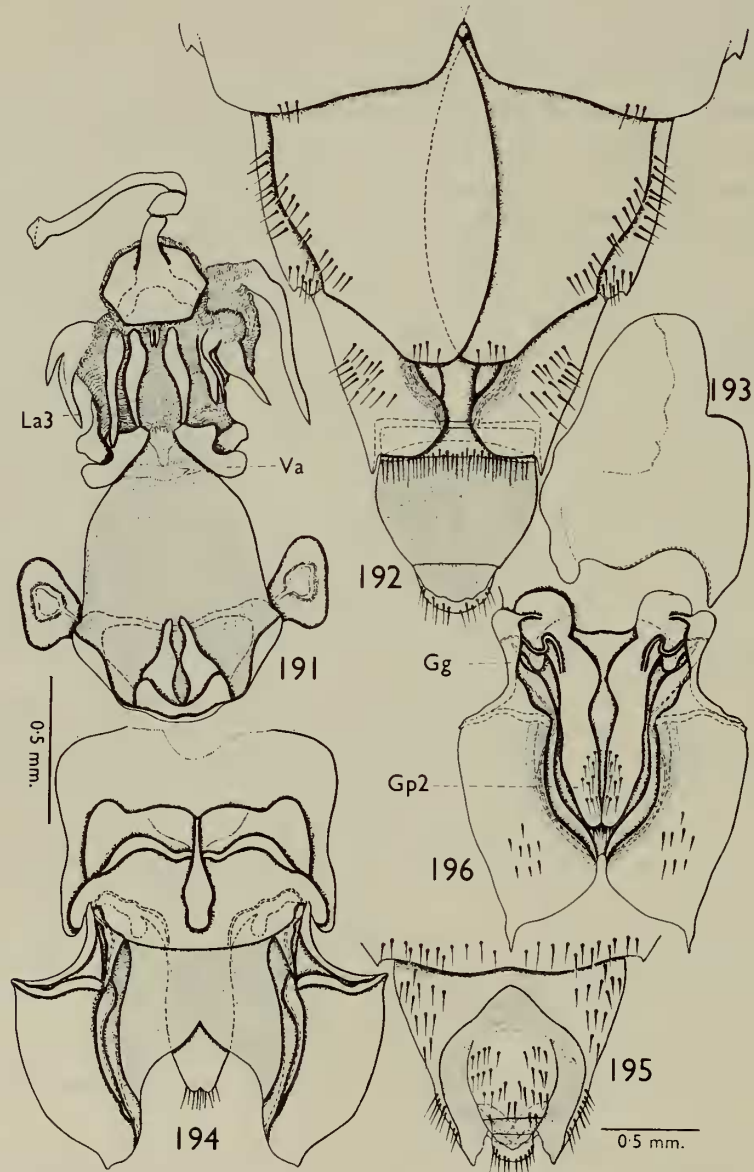
♀ GENITALIA: First gonocoxae comparatively narrow, leaving a portion of eighth paratergite unconcealed, outer margin irregular, apices truncated; intervalvular sacs absent; spermatheca large, bladder-shaped, without a distinct neck.

Type material. Holotype ♀, without data but with a label "Br/c" and other type labels, Hope Dept., Univ. Mus. Oxford; holotype ♀ of *Leptocorisa nigricornis* Stål, BRAZIL: Minas, Riksmus. Stockholm.

Other material. BRAZIL: 21 ♂, 16 ♀; BRITISH GUIANA: 1 ♂; VENEZUELA: 1 ♀; MEXICO: 2 ♂, 2 ♀; PANAMA (CANAL ZONE): 1 ♀; U.S.A., Florida: 1 ♂.

This species seems to be very common in Brazil. Adults have been collected throughout the year. Its range extends in the north into Florida.

This species is very close to *S. (O.) filiformis* (Fabricius) but can be separated by



FIGS. 191-196. *Stenocoris furcifera*. 191, 195, ♂, 192-194, 196, ♀. 191, aedeagus (inflated), ventral view; 192, terminalia, ventral view; 193, first gonopophysis, ventral view; 194, ovipositor, dorsal view; 195, terminalia, dorsal view; 196, ovipositor, ventral view.

the median longitudinal red line which runs on the ventral side of abdominal segments (but is sometimes only faintly represented) by the black anal and medial vein of hemielytra and by the short paraclypeae, which are thicker at base and thinner at apices.

LEPTOCORISA Latreille

Leptocorise Latreille, 1825 : 421

Leptocorisa Latreille, 1829 : 197 ; Guérin, 1830 : 178 ; Westwood, 1842 : 18 ; Dallas, 1852 : 481 ; Costa, 1863 : 260 ; Montrouzier, 1865 : 227 ; Walker, 1871 : 172 ; Stål, 1872 : 54, 1873 : 86 ; Lethierry and Severin, 1894 : 102 ; Distant, 1901 : 335, 1902 : 409 ; Breddin, 1909 : 293 ; Oshanin, 1912 : 24 ; Breddin, 1912 : 104 ; Van Duzee, 1914 : 378 ; China, 1924 : 237 ; Tillyard, 1926 : 148 ; Miller, 1956 : 55 ; Southwood and Leston, 1959 : 65

Leptocorixa Berthold, 1827 : 418 ; Kirkaldy, 1908 : 123 ; Reuter, 1913 : 78 ; Bergroth, 1913 : 12, 1913a : 159

Rhabdocoris Kolenati, 1845 : 67 **syn. n.**

Type-species : *Cimex acutus* Thunberg, 1783.

Body robust. Head elongated but shorter than pronotum, ocelli placed close together. Antennae with apices of basal segment slightly thicker. Rostrum usually short, touching second coxae.

In ♂, posterior margin of seventh abdominal tergum truncated ; pygophore rounded, claspers crossed behind, made up of two components, shaft (or main stem) and blade (or bent portion) ; aedeagus with both (dorsal and ventral) pairs of thecal appendages ; frontal conjunctival appendage membranous with usually two or three sclerotized pieces ; membranous appendage large, usually with a terminal and a dorsal appendage.

In ♀, posterior margin of seventh abdominal sternum emarginate, entire, without a fold or split ; first gonocoxae large, conical in form ; intervalvular sacs at least four pairs ; spermatheca usually irregular, always with a median flange.

This genus is close to *Stenocoris* Burmeister but can readily be distinguished by the form of the claspers, which in *Stenocoris* consist of a single component and by emarginate posterior margin of seventh abdominal sternum (which in *Stenocoris* is usually with a median projection, indentation or split). These genera can also be separated by the structure of aedeagus, for in *Stenocoris* the frontal conjunctival appendage is usually sclerotized and supporting and terminal appendages are wanting. The median flange of spermatheca of *Leptocorisa* is unique. The ranges of *Leptocorisa* and *Stenocoris* are distinct, for *Leptocorisa* is confined to Oriento-Australian region and *Stenocoris* is found in Ethiopian, Nearctic and Neotropical regions. From *Bloeteocoris* this genus can be separated by its normal genae and by other characters in the genitalia (see page 115).

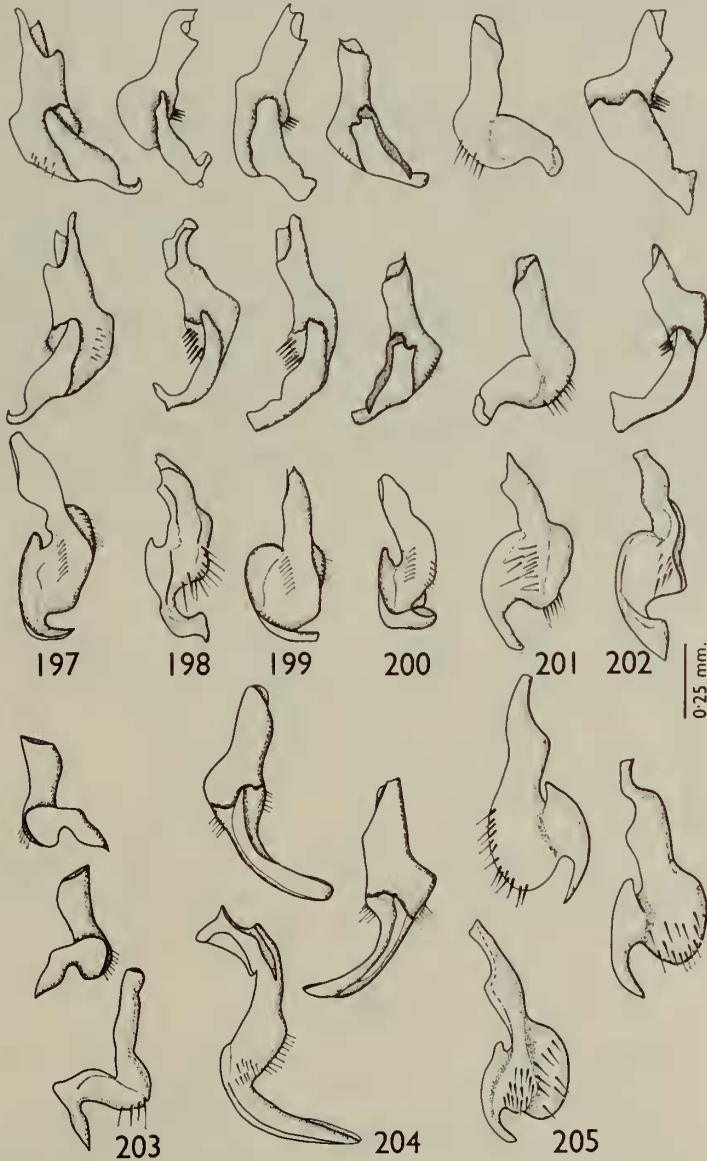
The preservation of the name *Leptocorisa* Latreille and the suppression of *Leptocorixa* Berthold are the subjects of an application to the International Commission on Zoological Nomenclature (China and Ahmad, 1963).

KEY TO SPECIES

- | | | |
|---|--|---|
| 1 | Rostrum long, always extending beyond the apices of second coxae, sometimes reaching third coxae | 2 |
| - | Rostrum short, never extending beyond second coxae. | 5 |

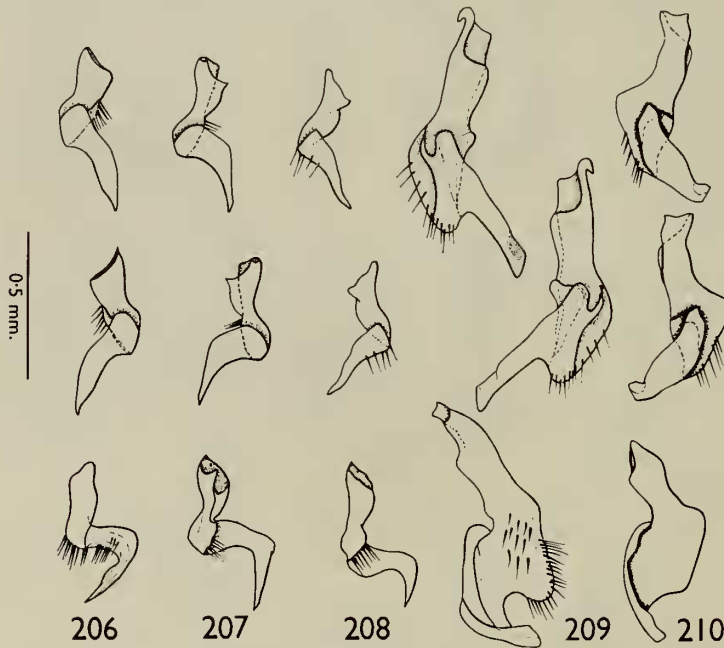
- 2 Lateral black line very prominent, extending from the bases of the antenniferous tubercles for at least three-quarters of the length of the propleuron ; posterior of disc of pronotum with black punctures 3
- Lateral black line faint, never extending beyond the pronotal collar ; disc of pronotum never with black punctures, sometimes with greenish tinge 4
- 3 Central black line on venter of abdomen present, extending from the first to sixth segments ; rostrum usually extending halfway between second and third coxae, never touching third, basal quarters of apical segments of antennae never pale (pygophore almost of square shape with thin lobes of ninth segment (Text-fig. 342), blades of the claspers long (Text-fig. 345), ventral thecal appendages asymmetrical (Text-fig. 344) ; first gonocoxae large with truncated broad apices (Text-fig. 251) ; spermatheca large, fusiform with a rounded smooth neck and a short tube (Text-fig. 237)) *solomonensis* (p. 104)
- Central black line on venter of abdomen absent, rostrum usually reaching third coxae ; basal quarters of apical segments of antennae pale. (Pygophore rounded, with thick and rounded lobes of ninth segments (Text-fig. 291) ; blades of claspers short (Text-fig. 200) ; ventral thecal appendages symmetrical (Text-fig. 293) ; first gonocoxae small, with rounded lobe-like apices (Text-fig. 242) ; spermatheca elongated and thin, with a long curved neck, giving a small knob near its apex (Text-fig. 228)) *discoidalis* (p. 87)
- 4 Paraclypeae remarkably elongated, cylindrical and pointed (Text-fig. 322) ; lateral black line only faintly represented by two brownish black dots, one on sides of antenniferous tubercles and the other on collar. (Ventral thecal appendages symmetrical (Text-fig. 325) ; right lateral conjunctival appendages three in number (Text-fig. 324) ; dorsal membranous appendage with a pointed hooked terminal and a short curved dorsal appendage (Text-fig. 324) ; spermatheca with a broad median flange and a tube which is twisted at the base (Text-fig. 229)) *palawanensis* (p. 98)
- Paraclypeae short, thick at base ; lateral black line represented on sides of antenniferous tubercles, extending back to the sides of collar. (Ventral thecal appendages asymmetrical (Text-fig. 337) ; right lateral conjunctival appendages two in number (Text-fig. 338) dorsal membranous appendage with a bulb-like terminal and a bilobed dorsal appendage (Text-fig. 338) ; spermatheca short, flask-shaped with a transverse neck (Text-fig. 238)) *sakdapolrakae* (p. 102)
- 5 Posterior third of dorsum of abdomen black, apical segments of antennae pale both at bases and apices ; paraclypeae acutely pointed, claspers narrow at base, strongly and abliquely truncate (Text-fig. 203). Ventral thecal appendages spiny (Text-fig. 287) ; spermatheca short, twisted at apex (Text-fig. 231) *costalis* (p. 85)
- Dorsum of abdomen uniformly pale, brown or ochraceous ; apical antennal segments never pale at both bases and apices ; paraclypeae never acutely pointed 6
- 6 Hemielytra, except costal margins above the membrane, dark black, claspers extending well beyond pygophore, with broad truncated apices (Text-fig. 273). (Second right lateral conjunctival appendage bifurcated (Text-fig. 216,F) ; spermatheca linear and thin (Text-fig. 230)) *biguttata* (p. 80)
- Hemielytra usually unicolourous, pale or ochraceous, never dark black as above, claspers never extending beyond pygophore, apex never broadly truncated as above 7
- 7 Body short, length not exceeding 12 mm. 8
- Body long, length exceeding 14 mm. 10
- 8 Paraclypeae long, somewhat pointed, smoothly regular (Text-fig. 296) ; claspers usually extending slightly beyond pygophore, apices pointed. (Second right lateral conjunctival appendage short, thicker in middle and pointed at apex (Text-fig. 220) ; spermatheca below flange elongated and pointed (Text-fig. 234)) *lepida* (p. 88)

- Paraclypeae short, usually blunt, either thicker at base or in middle (Text-fig. 309 or 329) ; claspers never extending posterior margin of pygophore, curved and rounded
- 9 Paraclypeae thin at base and thicker in middle (Text-fig. 309) ; in ♂, posterior margin of seventh abdominal tergum with a slight truncated median projection,

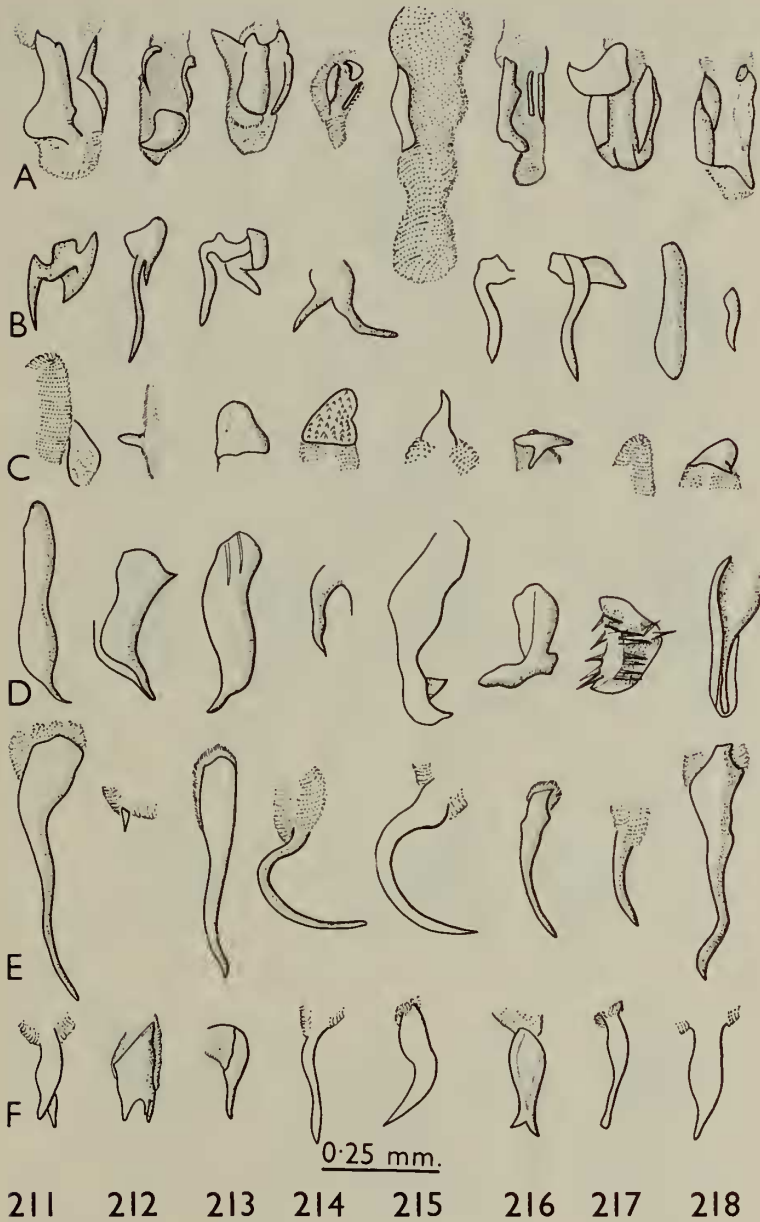


FIGS. 197-205. *Leptocorisa* spp., claspers, outer and inner views. 197, *oratorius* ; 198, *acuta* ; 199, *chinensis* ; 200, *discoidalis* ; 201, *palawanensis* ; 202, *biguttata* ; 203, *costalis* ; 204, *tagalica* ; 205, *luzonensis*.

- pygophore rounded (Text-fig. 308). (Dorsal membranous appendage of aedeagus with a flat pointed (first terminal appendage) appendage at base of terminal appendage (Text-fig. 311) ; first gonocoxae elongated and almost pointed (Text-fig. 250)) *luzonica* (p. 92)
- Paraclypeae thicker at base and thinner in middle ; in ♂, posterior margin of seventh abdominal tergum truncated, not produced as above ; pygophore elongated (Text-fig. 332) ; (dorsal membranous appendage with an unsclerotized triangular appendage (first terminal appendage) at the base of terminal appendage (Text-fig. 331) ; first gonocoxae broad with rounded apices (Text-fig. 249))
- pseudolepida* (p. 100)
- 10 Apices of femora and bases of tibiae black, two black spots behind ocelli 11
- Legs usually pale unicolourous, sometimes with blackish tinge but specially apices of femora and bases of tibiae never black ; no black spots behind ocelli 12
- 11 Body pale ochraceous ; claspers with very long cylindrical and pointed blades (Text-fig. 204). (Right lateral conjunctival appendages three in number (Text-fig. 350) ; terminal appendage flat (Text-fig. 350) ; in ♀, lateral posterior margin of seventh abdominal sternum giving tiny backward projections (Text-fig. 351) ; spermatheca elongated and pointed (Text-fig. 232)) *tagalica* (p. 106)
- Body light brown, claspers with a short and pointed blade (Text-fig. 205) (only one bilobed right lateral conjunctival appendage (Text-fig. 305) ; terminal appendage triangular (Text-fig. 305) ; in ♀, lateral posterior margin of seventh abdominal sternum without tiny backward projections (Text-fig. 306) ; spermatheca balloon-shaped, blunt, with a tube of irregular thickness (Text-fig. 233)) *luzonensis* (p. 90)
- 12 Body robust, usually with brownish black ventro-lateral spots on abdomen ; claspers wide at base with extremities curved and tapering to a point (Text-fig.



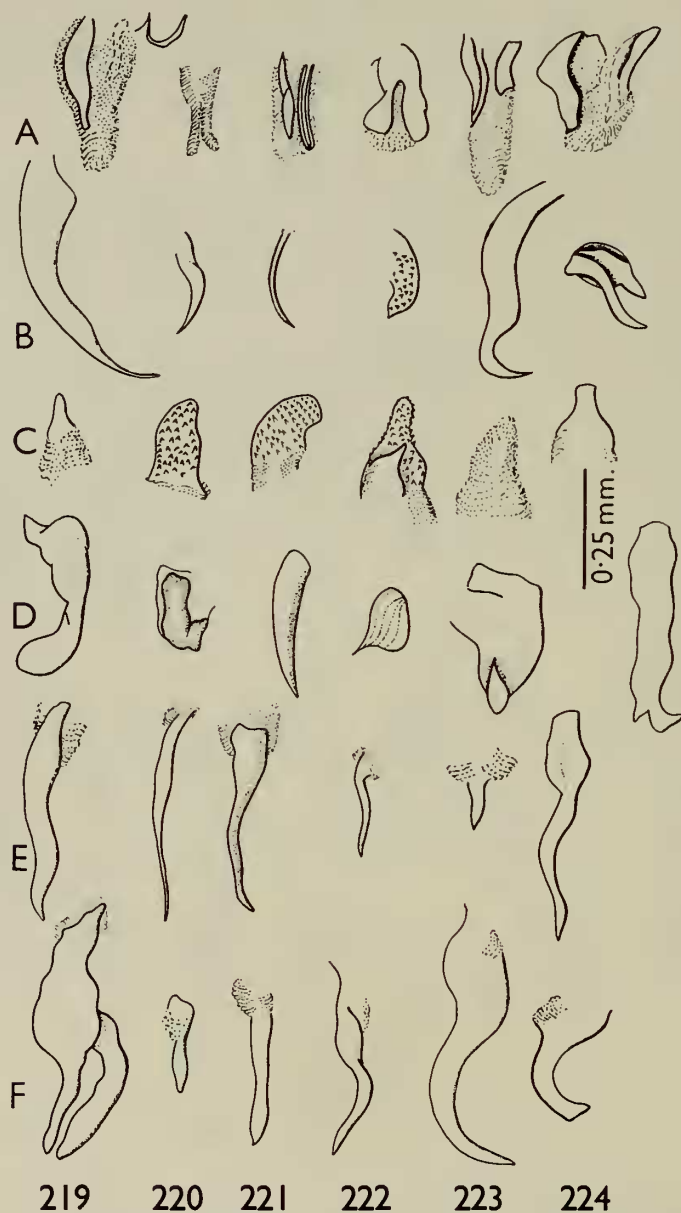
FIGS. 206-210. *Leptocorisa* spp., claspers, outer and inner views. 206, *lepida* ; 207, *pseudolepida* ; 208, *luzonica* ; 209, *solomonensis* ; 210, *sakdapolvakae*.



FIGS. 211-218. *Leptocorisa* spp., aedeagal appendages, outer view; A, frontal appendage; B, dorsal conjunctival appendage; C, terminal appendage; D, ventral thecal appendage; E, left lateral conjunctival appendage; F, second right lateral conjunctival appendage. 211, *oratorius*; 212, *acuta*; 213, *chinensis*; 214, *discoidalis*; 215, *palawanensis*; 216, *biguttata*; 217, *costalis*; 218, *tagalica*.

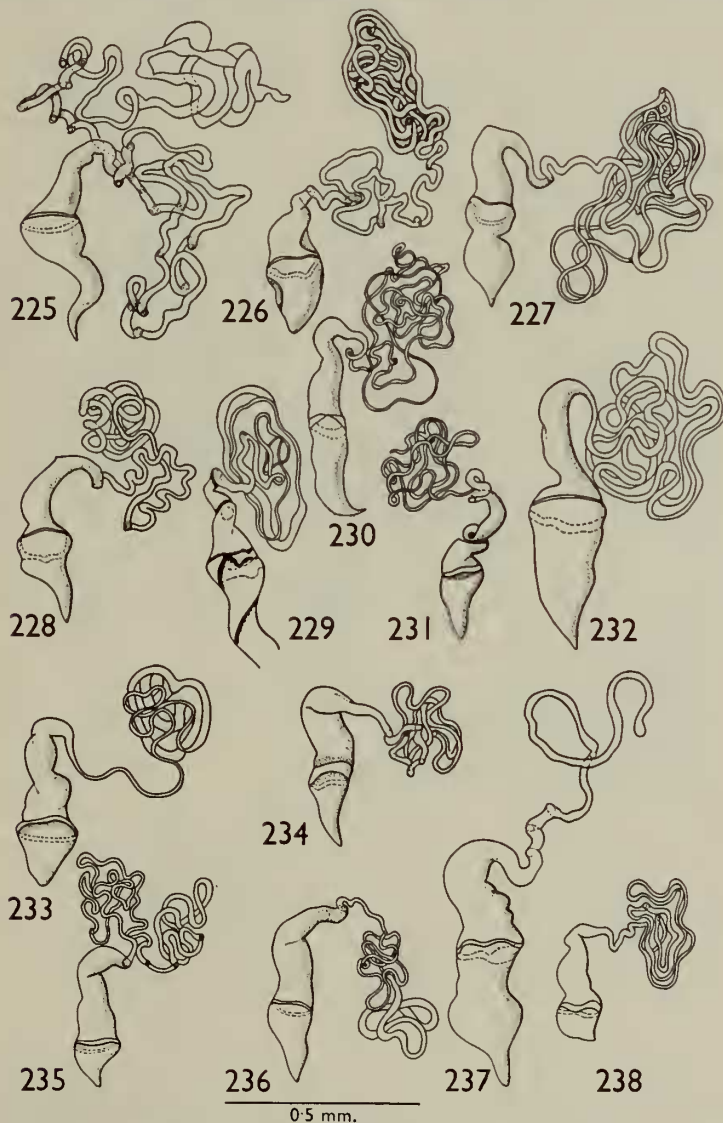
197). (Second right lateral conjunctival appendage bilobed (Text-fig. 211, F) ; in ♀, posterior margin of seventh abdominal sternum deeply emarginate (Text-fig. 315), first gonocoxae elongated, giving a tiny lobe at apices (Text-fig. 239))

oratorius (p. 94)



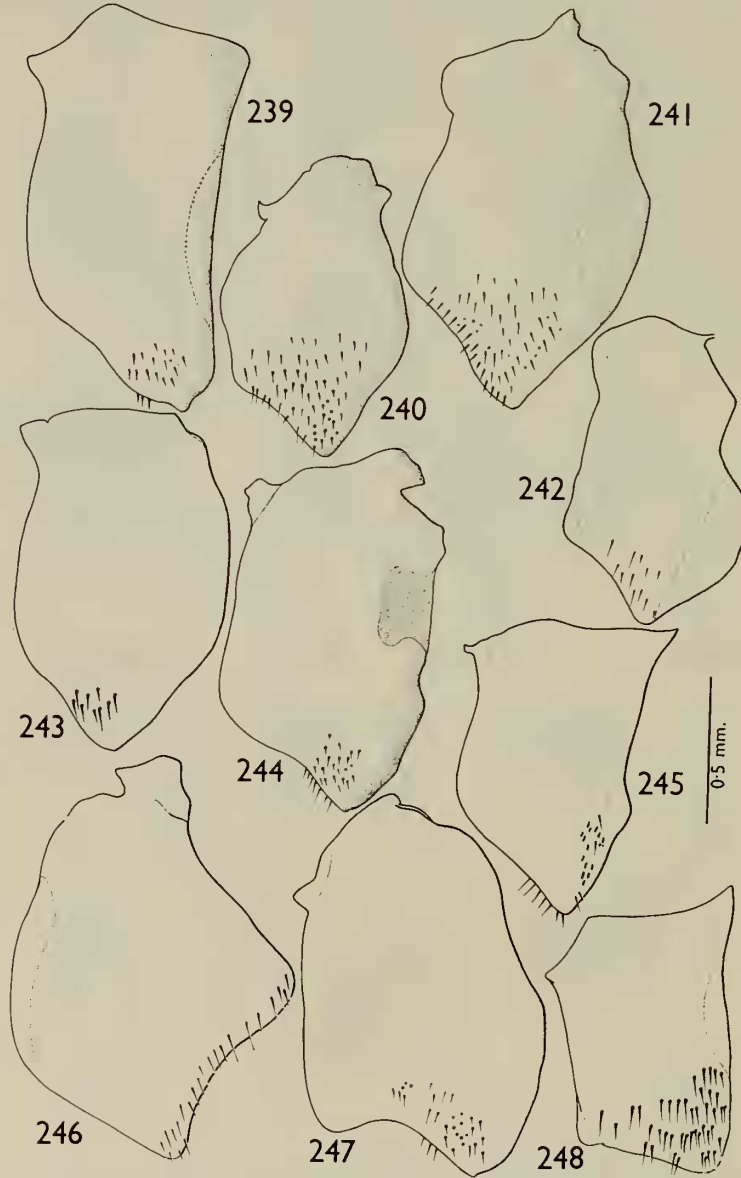
FIGS. 219-224. *Leptocorisa* spp., aedeagal appendages, lettering as in figs. 211-218. 219, *luzonensis*; 220, *lepida*; 221, *pseudolepida*; 222, *luzonica*; 223, *solomonensis*; 224, *sakdapolvaka*.

- Body more cylindrical, without ventro-lateral spots on abdomen ; claspers never pointed ; second right lateral conjunctival appendage never bilobed. 13
- 13 Basal joint of antennae usually pale unicoloured, lateral black line represented by only a black dot on the sides of collar ; claspers bifid at apices (Text-fig. 198). (Second right lateral conjunctival appendage trilobed (Text-fig. 212, F) ; in ♀, posterior margin of seventh abdominal sternum with a pointed median projection (Text-fig. 269) ; spermatheca irregular (Text-fig. 226)) *acuta* (p. 78)

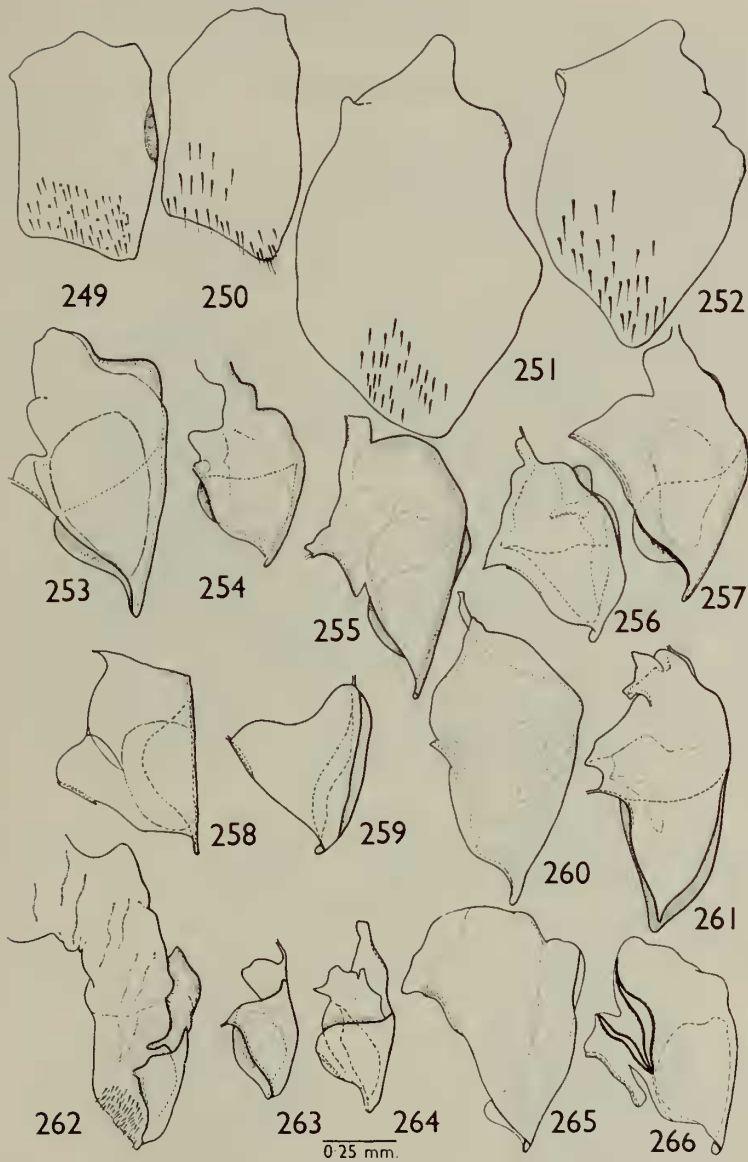


FIGS. 225-238. *Leptocoris* spp., spermatheca, ventral view. 225, *oratorius* ; 226, *acuta* ; 227, *chinensis* ; 228, *discoidalis* ; 229, *palawanensis* ; 230, *biguttata* ; 231, *costalis* ; 232, *tagalica* ; 233, *luzonensis* ; 234, *lepida* ; 235, *pseudolepida* ; 236 *luzonica* ; 237, *solomonensis* ; 238, *sakdapolrakae*.

- Basal joint of antennae dark brown or black ; lateral black line extending from bases of antenniferous tubercles to sides of collar, apices of claspers truncated (Text-fig. 199). (Second right lateral conjunctival appendage with a single lobe (Text-fig. 213, F) ; in ♀, posterior margin of seventh abdominal sternum with a rounded median projection (Text-fig. 280) ; spermatheca thinner in middle, almost divided into two compartments (Text-fig. 227)) . . . *chinensis* (p. 82)



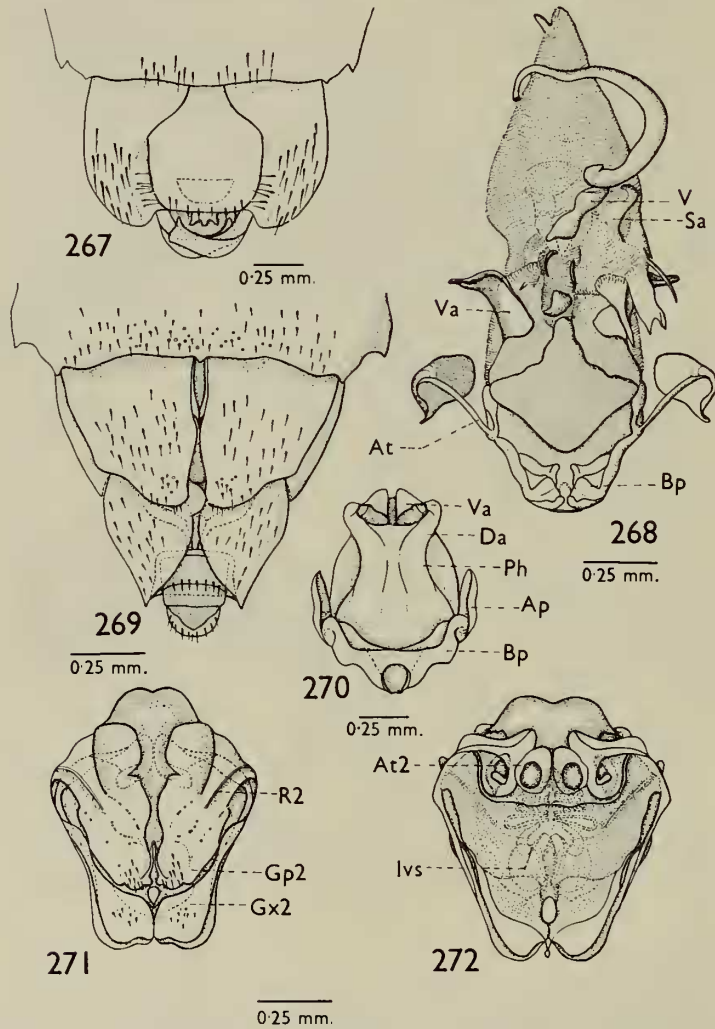
FIGS. 239-248. *Leptocorisa* spp., first gonocoxa, ventral view. 239, *oratorius* ; 240, *acuta* ; 241, *chinensis* ; 242, *discoidalis* ; 243, *palawanensis* ; 244, *biguttata* ; 245, *costalis* ; 246, *tagalica* ; 247, *luzonensis* ; 248, *lepida*.



FIGS. 249-266. *Leptocoris* spp., 249-252, first gonocoxa, ventral view; 253-266, first gonopophysis, ventral view. 249, *pseudolepida*; 250, *luzonica*; 251, *solomonensis*; 252, *sakdapolrakae*; 253, *oratorius*; 254, *acuta*; 255, *chinensis*; 256, *discoidalis*; 257, *palawanensis*; 258, *biguttata*; 259, *costalis*; 260, *tagalica*; 261, *luzonensis*; 262, *lepida*; 263, *pseudolepida*; 264, *luzonica*; 265, *solomonensis*; 266, *sakdapolrakae*.

Leptocoris acuta (Thunberg)

(Text-figs. 198, 212, 226, 240, 254, 267-272)

Cimex acutus Thunberg, 1783 : 34*Leptocoris (Rhabdocoris) acuta* (Thunberg) Stål, 1873 : 86*Cimex angustata* Fabricius, 1787 : 308*Cimex angustus* Fabricius ; Gmelin, 1789 : 2193*Gerris angustata* (Fabricius) Fabricius, 1803 : 262*Gerris varicornis* Fabricius, 1803 : 260 **syn. n.***Leptocoris flavida* Guérin, 1830 : 178 **syn. n.**

FIGS. 267-272. *Leptocoris acuta*, 267, 268, 270, ♂, 269, 271, 272 ♀. 267, terminalia, dorsal view ; 268, aedeagus (inflated), ventral view ; 269, terminalia, ventral view ; 270, theca, dorsal view ; 271, ovipositor, ventral view ; 272, same, dorsal view.

Coreus varicornis (Fabricius) Burmeister, 1834 : 298

Myodocha varicornis (Fabricius) Burmeister, 1835 : 325

Leptocorisa varicornis (Fabricius) Dallas, 1852 : 484

Leptocorisa (*Rhabdocoris*) *varicornis* (Fabricius) Stål, 1873 : 86 ; China, 1924 : 237

Characterized by claspers which are bifurcated at their apices and by the form of the ♂ and ♀ genitalia.

♂. Body length, 15.0–16.0 mm., width, 2.3–2.4 mm. Head length, 1.8–2.0 mm., width, 1.4–1.5 mm. Antennae, segment I, 4.0–5.0 mm., II, 2.7–2.8 mm., III, 3.0–3.4 mm., IV, 5.7–5.9 mm. Rostrum, segment I, 1.4–1.6 mm., II, 1.4–1.6 mm., III, 0.7–0.9 mm., IV, 0.7–0.9 mm. Pronotum, length, 2.4–2.5 mm., width, 2.3–2.4 mm. Hind femora, 6.0–6.2 mm. Hind tibia, 6.8–7.0 mm. Distance between ocelli, 0.45–0.5 mm., distance between an ocellus and an eye, 0.7–0.75 mm.

Body cylindrical, palish brown. Head elongated, pale ; occipital suture medially deeply concave ; paraclypeae long and pointed. Antennae uniformly pale, sometimes tinged with brownish black. Rostrum short, hardly reaching apices of second coxae. Lateral black line represented by only a black dot on either side of collar. Pronotal disc with whitish margins, with black spots on posterior angles. Legs uniformly pale, sometimes slightly darker. Posterior margin of seventh abdominal tergum truncate ; pygophore rounded and small (Text-fig. 267).

♂ GENITALIA : Claspers bifid at apices (Text-fig. 198) ; dorsal and ventral pairs of thecal appendages present ; ventral thecal appendages symmetrical as in Text-fig. 268 ; left lateral conjunctival appendage reduced, spine-like ; frontal conjunctival appendage with a distinct posterior sclerite ; two right lateral conjunctival appendages as in Text-fig. 268, second trilobed ; dorsal membranous appendage with a pointed terminal and bilobed dorsal conjunctival appendages as in Text-fig. 268.

♀. Very similar to ♂ in colour and measurements ; seventh abdominal sternum emarginate, with a very small median triangular projection (Text-fig. 269).

♀ GENITALIA : First gonocoxae small, outer margins sinuate, apices rounded (Text-fig. 240) ; six pairs of intervalvular sacs (Text-fig. 272) ; spermatheca irregular, with a median flange and a long coiled tube (Text-fig. 226).

Type material. Holotype of *Cimex acutus* Thunberg, without any data (abdomen and antennal segments missing), Zool. Inst., Uppsala ; neotype ♂, MALAYA : “ *Cimex acutus* Thunb. ” “ with Stål’s label ” “ sec. Mus. Thunb. ”, Riksmus. Stockholm ; holotype ♂ of *Gerris varicornis* Fabricius, without any data (Jrassquebana, Dalldorff. Mus. Jondlund), Zool. Mus. Copenhagen ; holotype ♂ of *Gerris angustata* Fabricius, without data, labelled “ *angustata* ”, Zool. Mus. Copenhagen.

Other material. INDIA : 41 ♂, 23 ♀ ; PAKISTAN : 2 ♂, 1 ♀ ; BURMA : 3 ♂, 2 ♀ ; BHUTAN : 21 ♂, 15 ♀ ; VIETNAM : 113 ♂, 114 ♀ ; FORMOSA : 1 ♀ ; HONGKONG : 1 ♂, 1 ♀ ; THAILAND : 317 ♂, 119 ♀ ; MALAYA : 12 ♂, 8 ♀ ; SUMATRA : 1 ♂ ; SARAWAK : 17 ♂, 11 ♀ ; NORTH BORNEO : 187 ♂, 207 ♀ ; PHILIPPINE ISLANDS : 4 ♂, 4 ♀ ; NEW GUINEA : 218 ♂, 110 ♀ ; NEW BRITAIN : 1 ♂ ; NEW IRELAND : 18 ♂, 15 ♀ ; AUSTRALIA : 55 ♂, 56 ♀ ; SOLOMON ISLANDS : 54 ♂, 25 ♀ ; NEW CALEDONIA : 2 ♂, 2 ♀ ; NEW HEBRIDES : 4 ♂, 3 ♀ ; FIJI ISLANDS : 118 ♂, 137 ♀ ; SAMOAN ISLANDS : 194 ♂, 115 ♀.

This species is a major pest of paddy crops and is found in all rice growing regions of the Far East countries. It is very common in India (U.P.) (and here it is known as “ Gandhi bug ”), Sarawak, and New Guinea. Its range extends in the west into

India and in the east right into Samoa, New Caledonia and the Fiji Islands and is found throughout the year. No specimens have been recorded from Java and Ceylon. Its biology and life history have been studied in India by Lefroy (1908) and Akbar (1958) under the name of *Leptocoris* *varicornis* (Fabricius).

This species, with *L. oratorius* (Fabricius) and *L. chinensis* Dallas, forms a group of widely distributed pests of paddy crops in the Far East, but it can easily be separated from them and in fact from all other species of *Leptocoris* in the ♂ by the claspers, which are bifurcated at apices and in the ♀ by a very small median triangular projection of the seventh abdominal sternum.

Stål redescribed *acutus* Thunberg and *varicornis* Fabricius as distinct species. During the present study the types of both the species have been examined, and were found to represent the same species. In view of the damaged condition of the supposed type of *acutus* Thunberg in the Zoological Institute, Uppsala, and with the agreement of Dr. Kullenberg (Mr. Hedstrom), a male specimen in the Riksmus., Stockholm from the type locality (Malacca) and bearing Stål's label "*Cimex acutus* Thunb. Mus. Thunb." has been designated neotype and has been given a neotype label.

Leptocoris biguttata Walker

(Text-figs. 202, 216, 230, 244, 258 and 273-277)

Leptocoris biguttata Walker, 1871 : 174

Leptocoris biguttata Walker; Distant, 1901 : 372 [as synonym of *L. costalis* Herrich Schäffer]

Characterized by hemielytra which, excluding the costal margins, are black, by lateral black line extending from sides of antenniferous tubercles on to pronotal collar, by short paraclypeae, which are thick at bases and pointed at apices, and by the form of ♂ and ♀ genitalia.

♂. Body length, 16.0-17.0 mm., width, 2.2-2.4 mm. Head length, 2.2-2.3 mm., width, 1.7-1.8 mm. Antennae, segment I, 4.8-4.9 mm., rest missing. Rostrum, segment I, 1.6-1.7 mm., II, 1.7-1.8 mm., III, 0.9-1.0 mm., IV, 0.8 mm. Pronotum, length, 2.7-2.8 mm., width, 2.2-2.4 mm. Hind femora, 7.0 mm. Hind tibia, 7.0-7.2 mm. Distance between ocelli, 0.5-0.55 mm., distance between an ocellus and an eye, 0.95 mm.

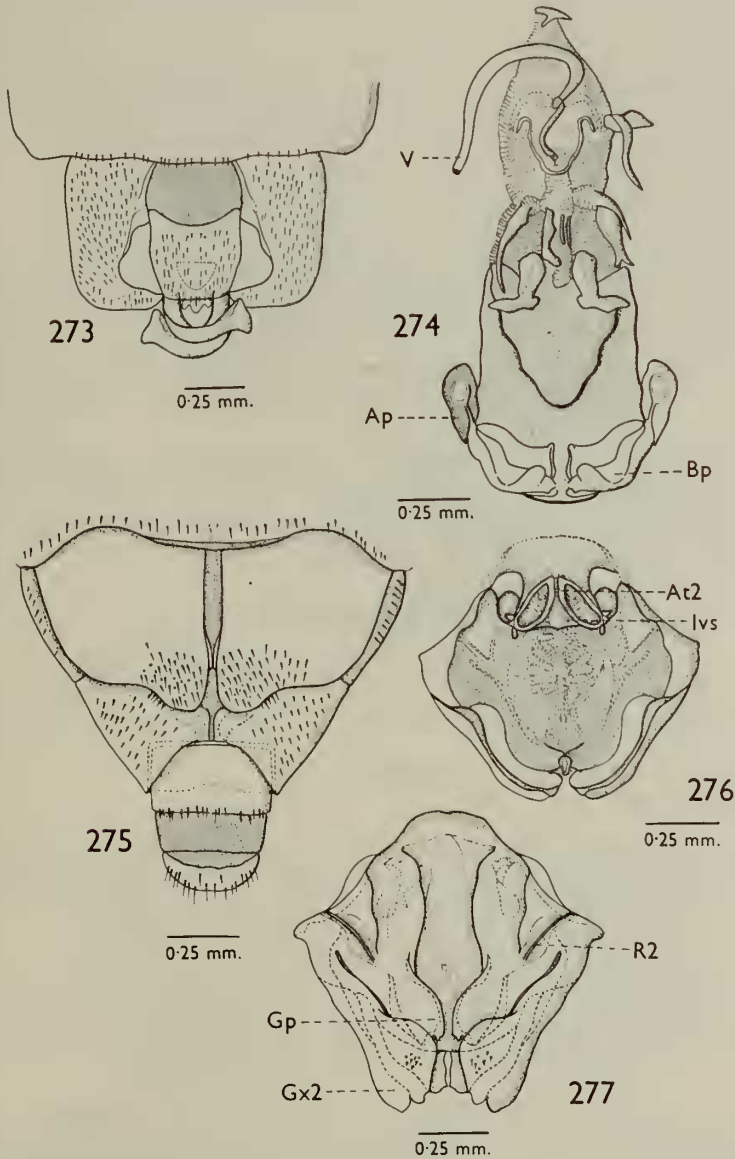
Body elongated, robust and brownish black. Head elongated, yellowish brown with occipital suture medially smoothly concave; paraclypeae short, very thick at bases and pointed at apices. Rostrum short, reaching apices of second coxae. Lateral black line extending from sides of antenniferous tubercles on to collar. Pronotal disc yellowish brown, posterior angle with black spots. Hemielytra, excluding costal margin, dark black. Legs brownish black, hind femora darker. Posterior margin of seventh abdominal tergum truncated, medially very slightly convex; pygophore almost rectangular (Text-fig. 273).

♂ GENITALIA : Claspers extending well beyond the posterior margin of pygophore, apices broadly truncated (Text-fig. 202); both dorsal and ventral thecal appendages present as in Text-fig. 274, symmetrical; left lateral conjunctival appendage short, pointed and curved like an arch; frontal conjunctival appendages with three sclerotized pieces as in Text-fig. 274; two right lateral conjunctival appendages, second thick at base and bifurcated at apex (Text-fig. 216, F); dorsal membranous appendage with a laterally pointed terminal, and a bilobed dorsal appendage (Text-fig. 274).

♀. Body length, 17.5-17.8 mm., width, 2.4-2.5 mm. Head length, 2.2-2.4 mm., width, 1.8-1.9 mm. Antennae, segment I, 5.0 mm., II, 3.0 mm., III, 3.3 mm., IV, missing. Rostrum,

segment I, 1.5-1.6 mm., II, 1.7-1.8 mm., III, 0.8-0.9 mm., IV, 0.7-0.8 mm. Pronotum, length, 2.8-2.9 mm., width, 2.4-2.5 mm. Hind femora, 6.9-7.0 mm. Hind tibia, 7.0-7.1 mm. Distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.9 mm.

Slightly longer than ♂ with usually less dark hemelytra, posterior margin of seventh abdominal sternum emarginate, with a very small rounded projection in the middle (Text-fig. 275).



FIGS. 273-277. *Leptocorisa biguttata*, 273, 274, ♂, 275-277, ♀. 273, terminalia, dorsal view ; 274, aedeagus (inflated), ventral view ; 275, terminalia, ventral view ; 276, ovipositor, dorsal view ; 277, same, ventral view.

♀ GENITALIA : First gonocoxae broad at bases, apices pointed (Text-fig. 244) ; fifteen pairs of intervalvular sacs (Text-fig. 276) ; spermatheca elongated and thin, with a coiled tube and a median flange as in Text-fig. 230.

Type material. Holotype ♀, CELEBES : Gilolo (Wallace Coll.), B.M.(N.H.).

Other material. MALAYA : 13 ♂, 14 ♀ ; PHILIPPINE ISLANDS : 4 ♂, 2 ♀ ; SARAWAK : 25 ♂, 10 ♀ ; CELEBES : 6 ♂, 6 ♀ ; HALMAHERA ISLAND : 2 ♂, 1 ♀.

The range of this species extends in the west into Malaya and in the east as far as Halmahera Island east of the Celebes. This species has also been reported on paddy and on grasses, *Panicum barbatum*. It seems to be very common in the early part of the year, December, January and February.

This species is the closest ally of *L. costalis* (Herrich Schäffer) but can easily be separated from this species by the apical antennal segments, which are pale only at bases (pale both at bases and at apices in *costalis*), by the dorsum of abdomen which is yellowish brown, unicolourous (posterior one-third black in *costalis*) and by the short paraclypeae, which are thicker at bases and pointed at apices (cylindrical, pointed and knob-like at apices in *costalis*). Its broadly truncated claspers extending well beyond the posterior margin of pygophore and linear spermatheca are its peculiarities.

Distant synonymized this species with *L. costalis* (Herrich Schäffer) and consequently this species was not included by China (1924) in his key for the Oriental species of *Leptocoris* ; but the apical antennal segments, abdominal colour and ♂ and ♀ genitalia show it to be distinct (see above).

Leptocoris chinensis Dallas

(Text-figs. 199, 213, 227, 241, 255 and 278-283)

Leptocoris chinensis Dallas, 1852 : 483

Leptocoris chinensis Dallas ; Stål, 1873 : 86 [as synonym of *Leptocoris (Rhabdocoris) varicornis* Fabricius]

Leptocoris nitidula Breddin, 1912 : 107 **syn. n.**

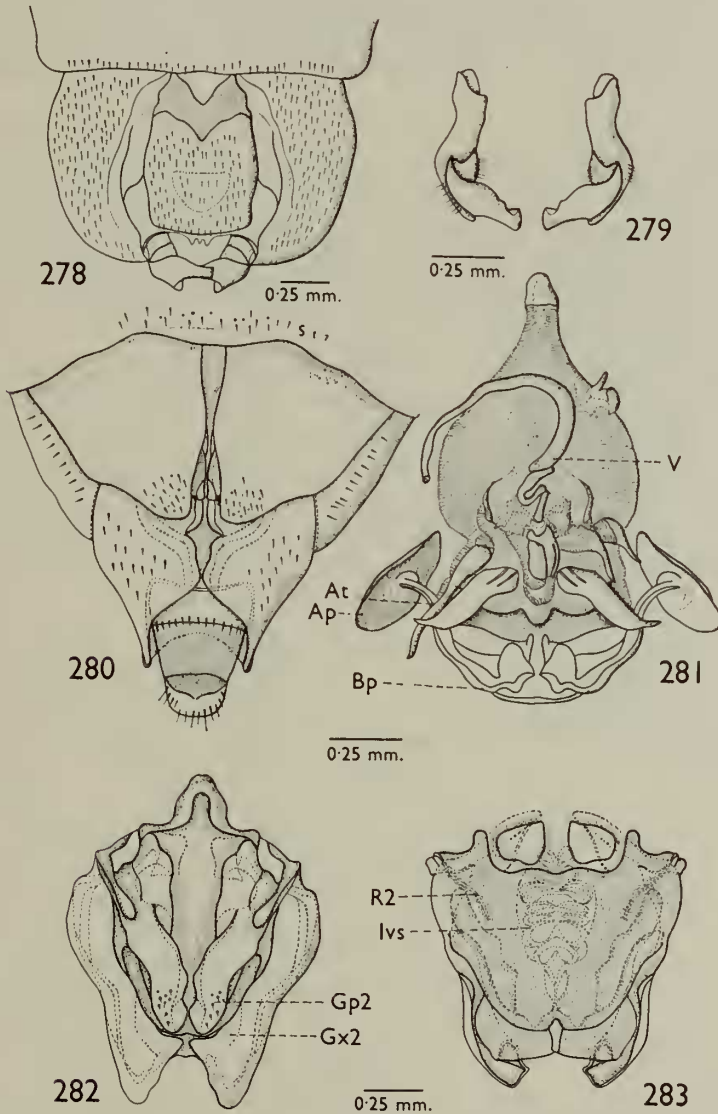
Leptocoris corbetti China, 1924 : 237 **syn. n.**

Characterized by the lateral black line, which is represented by two dots on the posterior sides of head and on the pronotal collar, by the basal antennal segments which are black at apices and by the form of ♂ and ♀ genitalia.

♂. Body length, 17.3-17.8 mm., width, 2.7-2.9 mm. Head length, 2.3 mm., width, 1.6 mm. Antennae, segment I, 4.2-4.3 mm., II, 2.8-2.9 mm., III, 3.0-3.3 mm., IV, 4.4-4.6 mm. Rostrum, segment I, 1.6-1.8 mm., II, 1.7-1.8 mm., III, 1.0-1.1 mm., IV, 1.0-1.1 mm. Pronotum, length, 3.0-3.2 mm., width, 2.7-2.9 mm. Hind femora, 6.6-6.9 mm. Hind tibia, 7.0-7.1 mm. Distance between ocelli, 0.6 mm., distance between an ocellus and an eye, 0.8 mm.

Body robust, pale. Head elongated, occipital suture medially concave ; paraclypeae elongated, and rounded at apices. Antennae pale, tinged with black. Rostrum short, reaching apices of second coxae. Lateral black line usually represented by two black dots on posterior sides of head and on pronotal collar. Pronotal disc pale unicolourous, black spots on posterior angles absent or faint. Legs pale, sometimes tinged with black. Posterior margin of seventh abdominal tergum truncated, pygophore large, rounded, (Text-fig. 278).

♂ GENITALIA : Claspers truncated at apices (Text-fig. 199) ; both dorsal and ventral thecal appendages present, symmetrical (Text-fig. 281) ; left lateral conjunctival appendage elongated, pointed and curved in middle ; frontal conjunctival appendage with two sclerotized pieces (Text-fig. 281) ; two right lateral conjunctival appendages, second with one lobe (Text-fig. 213,F) ; dorsal membranous appendage with a cap-shaped terminal appendage and a dorsal appendage as in Text-fig. 281.



FIGS. 278-283. *Leptocoris chinensis*, 278, 279, 281, ♂, 280, 282, 283, ♀. 278, terminalia, dorsal view ; 279, claspers, outer and inner view ; 280, terminalia, ventral view ; 281, aedeagus (inflated), ventral view ; 282, ovipositor, ventral view ; 283, same, dorsal view.

♀. Body length, 16.8–18.1 mm., width, 2.7–2.9 mm. Head length, 2.7 mm., width, 1.7 mm. Antennae, segment I, 4.1–4.8 mm., II, 2.7–2.9 mm., III, 3.1–3.7 mm., IV, 4.3–4.5 mm. Rostrum, segment I, 1.7–1.8 mm., II, 1.5–1.9 mm., III, 0.8–1.0 mm., IV, 0.7–1.0 mm. Pronotum, length, 2.9–3.1 mm., width, 2.7–2.9 mm. Hind femora, 6.7–6.8 mm. Hind tibia, 7.0–7.1 mm. Distance between ocelli, 0.5–0.6 mm., distance between an ocellus and an eye, 0.8–0.9 mm.

Very similar to ♂ in general appearance; posterior margin of seventh abdominal sternum with a minute median rounded projection (Text-fig. 280).

♀ GENITALIA: First gonocoxae large, rounded at apices (Text-fig. 241); seven pairs of intervalvular sacs (Text-fig. 283); spermatheca elongated, almost divided in middle, with a median flange (Text-fig. 227).

Type material. Neotype ♂, CHINA: Foochow (Fuchou), 10–14.vii.1936 (*M. S. Yang*), B.M.(N.H.); holotype ♀ of *Leptocorisa nitidula* Breddin, CHINA: Pingh'siang, near Kwangsi (Coll. Breddin, labelled "*Leptocorisa nitidula* Bredd."), Dtsch. Entom. Inst., Berlin; holotype ♂ of *Leptocorisa corbeti* China, MALAYA: Kuala Lumpur, 1933 (*G. H. Corbett*), B.M.(N.H.); paratypes, 1 ♂, 1 ♀, of *L. nitidula*, with data as holotype, Dtsch. Entom. Inst., Berlin; paratypes, 1 ♂, 6 ♀, of *L. corbeti*, with data as holotype, B.M.(N.H.).

Other material. CHINA: 24 ♂, 23 ♀; BONIN ISLAND: 1 ♂; FORMOSA: 1 ♂; THAILAND: 2 ♂; VIETNAM: 1 ♂; PHILIPPINE ISLANDS: 10 ♂, 6 ♀; BHUTAN: 40 ♂, 35 ♀; MALAYA: 10 ♂, 10 ♀; SUMATRA: 5 ♂, 2 ♀; PALAU ISLAND: 1 ♀.

The range of this species extends in the north into Bhutan and China, in the south into Sumatra and in the east into Malaya. This species has not been recorded from Australian region. The adults have been collected throughout the year; this species has also been recorded on grasses and four specimens were found in maize fields.

This species is very close to *L. oratorius* (Fabricius) and *L. acuta* (Thunberg) but can easily be separated from them by the lateral black line, which is represented by two brownish black dots on the sides of the head and pronotal collar. The outer side of basal antennal segment is usually black and the claspers are truncated at apices, whereas in *acuta* the lateral black line is represented by a black dot on the sides of collar and in *oratorius* lateral black line is absent. In *oratorius* claspers taper to a point posteriorly and in *acuta* these are bifurcated at apices.

In the original description, Dallas (1852) mentions "Head impunctate with a black line on each side. Antennae, with the basal joint fulvous black externally at the apex, legs pale fulvous, tibia sometimes black at the base and apex, tarsi black at the apex". The two specimens recorded by Dallas and presented by G. T. Lay can not now be found in the British Museum (Natural History) and are presumably lost. This species was consequently unknown to Dr. W. E. China and was not discussed in his 1924 revision. A number of specimens agreeing with Dallas's description have been found in the unnamed accessions in the British Museum. It is proposed to designate one of these (♂ B.M. 1948–548) from the type locality as neotype and this has been given a neotype label.

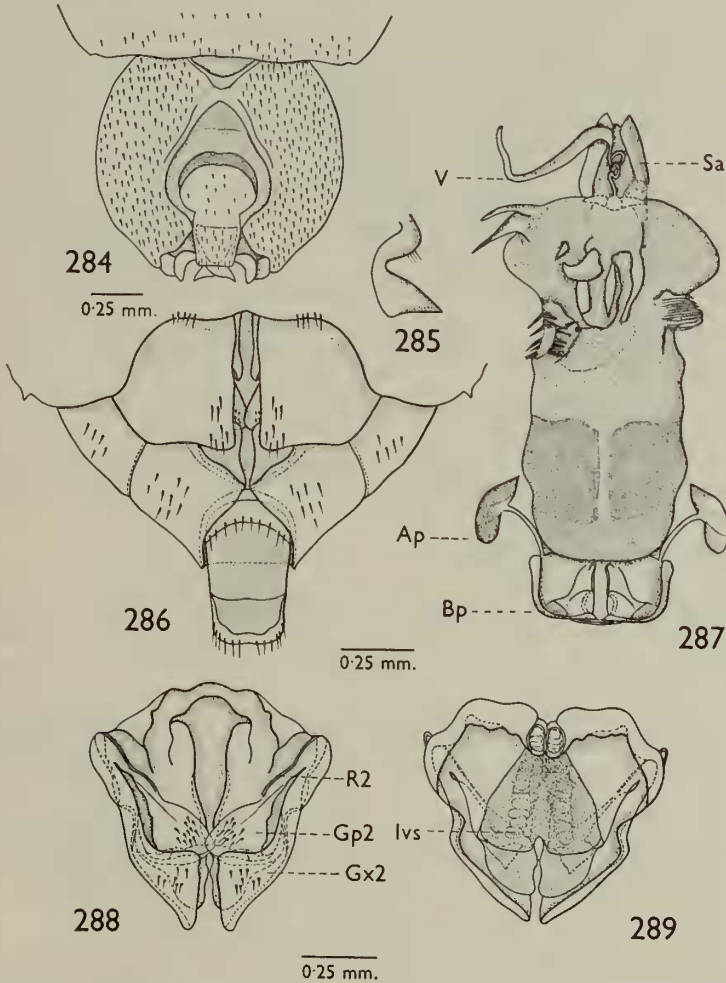
Stål (1873) synonymized this species with *varicornis* Fabricius. The synonymy has been found incorrect, the two species being easily separable (see above).

Leptocoris costalis (Herrich Schäffer)

(Text-figs. 203, 217, 231, 245, 259 and 284-289)

Myodochus costalis Herrich Schäffer, 1848 : 96*Leptocoris (Rhabdocoris) costalis* (Herrich Schäffer) Stål, 1873 : 86 ; China, 1924 : 238

Characterized by the apical segments of antennae, which are pale, both at bases and apices, by the basal third of the dorsum of the abdomen, which is black, by the paraclypeae which are cylindrical, and pointed, knob-like at apices, and by ♂ and ♀ genitalia.



FIGS. 284-289. *Leptocoris costalis*, 284, 285, 287, ♂, 286, 288, 289, ♀. 284, terminalia, dorsal view ; 285, claspers, inner view ; 286, terminalia, ventral view ; 287, aedeagus (inflated), ventral view ; 288, ovipositor, ventral view ; 289, same, dorsal view.

♂. Body length, 14.7–15.2 mm., width, 2.1–2.6 mm. Head length, 2.0–2.3 mm., (length of paraclypeae 0.7–0.8 mm.), width, 1.5–1.7 mm. Antennae, segment I, 4.0–4.7 mm., II, 2.5–2.7 mm., III, 2.8–2.9 mm., IV, 5.0–5.4 mm. Rostrum, segment I, 1.2–1.4 mm., II, 1.2–1.4 mm., III, 0.7–0.9 mm., IV, 0.7–0.8 mm. Pronotum, length, 2.4–2.7 mm., width, 2.1–2.6 mm. Hind femora, 6.0–6.4 mm. Hind tibia, 6.4–6.7 mm. Distance between ocelli, 0.4–0.5 mm., distance between an ocellus and an eye, 0.7–0.8 mm.

Body cylindrical, light brown, tinged with black. Head elongated, occipital suture almost straight, paraclypeae remarkably elongated and pointed knob-like at apices. Antennae brownish black, with apical segment pale, both at bases and at apices. Rostrum short, usually reaching apices of second coxae. Lateral black line prominent, extending from sides of antenniferous tubercles to anterior third of propleuron. Pronotal disc palish brown, sometimes anteriorly blackish, posterior angles with black spots. Legs brownish black, with basal half of femora pale. Hemielytra, excluding costal margins, black. Posterior margin of seventh abdominal tergum almost truncated, slightly sinuate; pygophore rounded (Text-fig. 284).

♂ GENITALIA: Claspers curved and acutely pointed, blades obliquely truncated (Text-fig. 203); both dorsal and ventral pairs of thecal appendages present, with ventral appendages, asymmetrical, spiny and sac-like (Text-fig. 287); three left lateral conjunctival appendages as in Text-fig. 287; frontal conjunctival appendages with three sclerotized pieces (Text-fig. 217,A); only one thin, curved and blunt right lateral conjunctival appendage present, (Text-fig. 217,F), membranous appendage without a terminal or a dorsal appendage (Text-fig. 287).

♀. Body length, 15.0–16.0 mm., width, 2.2–2.4 mm. Head length, 2.1–2.5 mm., width, 1.6–1.8 mm. Antennal segment I, 4.5–4.7 mm., II, 2.4–2.6 mm., III, 2.7–2.8 mm., IV, 5.2–5.4 mm. Rostrum, segment I, 1.5–1.6 mm., II, 1.4–1.6 mm., III, 0.7–0.9 mm., IV, 0.7–0.8 mm. Pronotum, length, 2.5–2.8 mm., width, 2.4–2.7 mm. Hind femora, 6.2–6.4 mm. Hind tibia, 6.4–6.6 mm. Distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.8–0.85 mm.

Very similar to ♂ in general appearance; posterior margin of seventh abdominal sternum sinuately emarginate (Text-fig. 286).

♀ GENITALIA: First gonocoxae triangular, apices pointed (Text-fig. 245); sixteen pairs of intervalvular sacs (Text-fig. 289); spermatheca twisted at apices, with a median flange and a long coiled tube of variable thickness.

Type material. Neotype ♂, JAVA: Carnegie Mus.

Other material. VIETNAM: 13 ♂, 17 ♀; SINGAPORE: 2 ♂, 1 ♀; THAILAND: 2 ♂; MALAYA: 10 ♂, 8 ♀; JAVA: 2 ♂; SUMATRA: 10 ♂, 12 ♀; SARAWAK: 26 ♂, 16 ♀; NORTH BORNEO: 18 ♂, 20 ♀; BORNEO: 1 ♂; PHILIPPINE ISLANDS: 2 ♂.

The range of this species extends in the west into Sumatra, Thailand and Malaya and in the east into Borneo and the Philippine Islands. It seems to be very common in Borneo. Adults have been collected almost throughout the year.

It is a completely isolated species in the genus on the basis of the aedeagus. However it is close to *L. biguttata* Walker in colouration of the hemielytra, but the two can easily be separated from each other by the characters of apical antennal segment, colouration of abdomen and shape of claspers (see above).

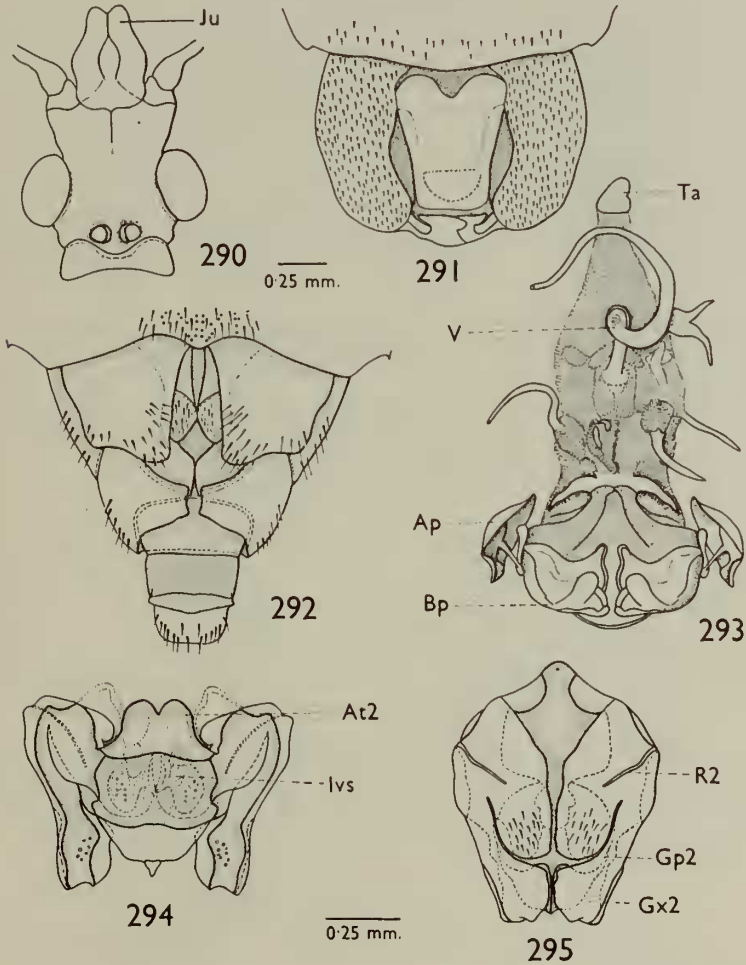
In the original description Herrich Schäffer (1848) stated " *M. virescens* antennis (articulo 4 basi albo) linea lateralis capitis, angulis posticis thoracis, scutello et elytris intus nigris, tibiis tarsisque fuscis (Fig. 864)". Dr. W. Forster (Zoologische Sammlung des Bayerischen Staates) has kindly informed the author that in 1944 the type of *Myodochus costalis* Herrich Schäffer was destroyed as the result of an air raid, but a number of specimens agreeing with Herrich Schäffer's description and

figure were identified. A male specimen from Java (the type locality) from the Carnegie Museum (No. 8147) has been designated neotype of *Leptocoris costalis* (Herrich Schäffer) and has been given a neotype label.

***Leptocoris discoidalis* Walker**
(Text-figs. 200, 214, 228, 242, 256 and 290–295)

Leptocoris discoidalis Walker, 1871 : 173

Leptocoris (Rhabdocoris) discoidalis (Walker) China, 1924 : 239



FIGS. 290–295. *Leptocoris discoidalis*, 290, 291, 293, ♂, 292, 294, 295, ♀. 290, head, dorsal view; 291, terminalia, dorsal view; 292, terminalia, ventral view; 293, aedeagus (inflated), ventral view; 294, ovipositor, dorsal view; 295, same, ventral view.

Characterized by long rostrum, which reaches third coxae and by the form of ♂ and ♀ genitalia.

♂. Body length, 15.5–16.5 mm., width, 2.2–3.0 mm. Head length, 1.7–1.9 mm., width, 1.5–1.7 mm. Antennae, segment I, 4.2–4.3 mm., II, 2.9–3.0 mm., III, 3.5–3.6 mm., IV, 5.2–5.3 mm. Rostrum, segment I, 1.9 mm., II, 1.9 mm., III, 0.9 mm., IV, 1.0 mm. Pronotum, length, 2.4–2.5 mm., width, 2.2–2.3 mm. Hind femora, 6.5–6.7 mm. Hind tibia, 6.8–6.9 mm. Distance between ocelli, 0.44–0.45 mm., distance between an ocellus and an eye, 0.7–0.75 mm.

Body elongate, testaceous, head short and broad (Text-fig. 290); occipital suture deeply concave in middle; paraclypeae short, medially thick and rounded at apices. Antennae, basal segment with inner side pale outer side and bases of second and third black, apical segment with at least basal quarter pale. Rostrum long, usually reaching apices of third coxae. Lateral black line extending from sides of antenniferous tubercles on to anterior three-quarters of propleuron. Pronotal disc pale, posteriorly with black punctures, black spots on posterior angles present. Legs yellowish, with apices of femora, tibiae and tarsi blackish. Hemelytra, clavus with black punctures. Posterior margin of seventh abdominal tergum medially slightly convex; lobes of ninth segment comparatively larger (Text-fig. 291).

♂ GENITALIA: Claspers very thick and truncated at apices (Text-fig. 200); dorsal and ventral thecal appendages present, with symmetrical ventral appendages (Text-fig. 293); lateral conjunctival appendage strongly inwardly curved (Text-fig. 214, E); frontal conjunctival appendage with two small sclerotized pieces (Text-fig. 214, A); two right lateral conjunctival appendages, with second short, thick and pointed at apex (Text-fig. 214, F); membranous appendage with a sclerotized cap-like terminal and a bilobed dorsal appendage (Text-fig. 293).

♀. Very similar to ♂ in colour and measurements, posterior margin of seventh abdominal sternum emarginate with a small convex median projection and tiny backward projections at sides (Text-fig. 292).

♀ GENITALIA: First gonocoxae small, outer margin convex, apices rounded (Text-fig. 292); only four pairs of intervalvular sacs present (Text-fig. 294); spermatheca having a knob at apex, with a median flange and a long coiled tube (Text-fig. 228).

Type material. Holotype ♀, NEW GUINEA: B.M.(N.H.).

Other material. CERAM ISLAND: 1 ♂; HALMAHERA ISLAND: 1 ♂; NEW GUINEA: 114 ♂, 65 ♀; NEW IRELAND: 15 ♂, 13 ♀; PHILIPPINE ISLANDS: 1 ♀; SOLOMON ISLANDS: 3 ♂, 1 ♀; NEW HEBRIDES: 6 ♂, 3 ♀.

The range of this species extends in the west into Indonesia (north of Ceram Island) and in the east into New Hebrides. It is very common in New Guinea and New Hebrides. The adults have been collected throughout the year.

This species is closest to *L. solomonensis* sp. n. but can easily be separated by rostrum which reaches third coxae, but not in *solomonensis*. In the aedeagus of *solomonensis* the ventral thecal appendages are asymmetrical and the terminal appendage is missing.

Leptocorisa lepida Breddin

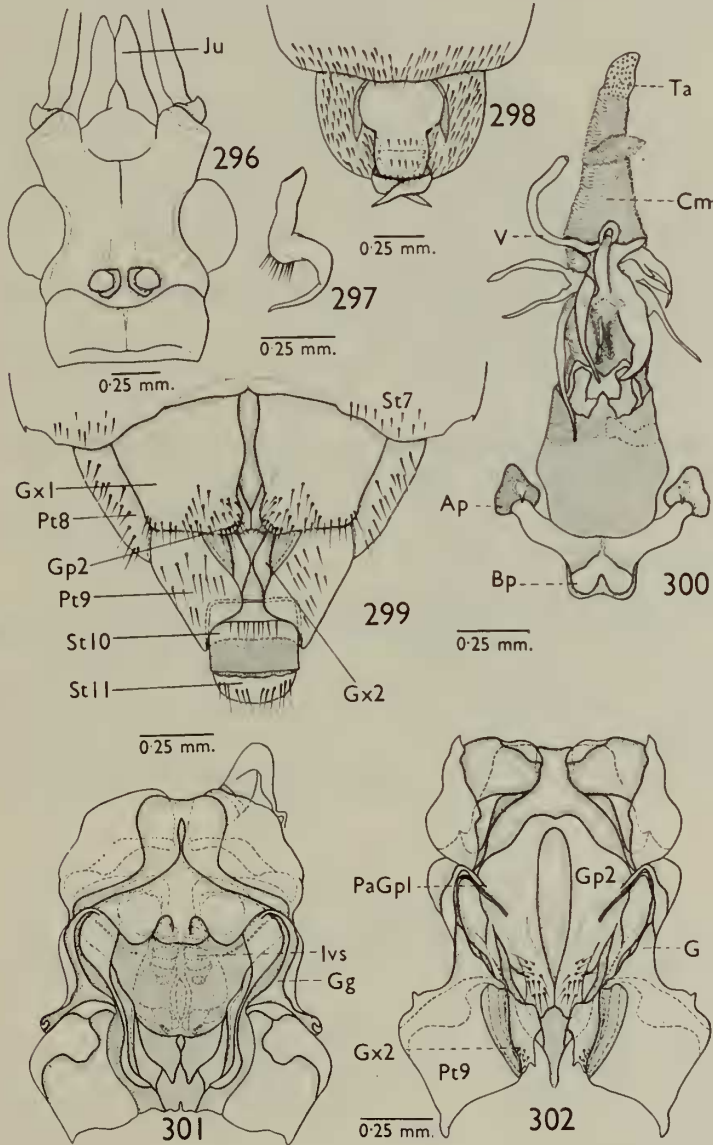
(Text-figs. 206, 220, 234, 248, 262, and 296–302)

Leptocorisa lepida Breddin, 1909: 293

Leptocorisa (Rhabdocoris) lepida (Breddin) China, 1924: 238

Characterized by very short and slim body, by long, cylindrical and pointed paraclypeae and by the form of ♂ and ♀ genitalia.

♂. Body length, 11.5–11.8 mm., width, 1.6–1.8 mm. Head length, 1.6–1.7 mm., width, 1.1–1.2 mm. Antennae, segment I, 3.5–3.7 mm., II, 2.0–2.2 mm., III, 2.5–2.6 mm., IV, missing. Rostrum, segment I, 1.0 mm., II, 1.0 mm., III, 0.6 mm., IV, 0.6 mm. Pronotum, length, 1.7–1.9 mm., width, 1.6–1.8 mm. Hind femora, 6.0 mm. Hind tibia, 6.0 mm. Distance between ocelli, 0.33–0.35 mm., distance between an ocellus and an eye, 0.56–0.6 mm.



FIGS. 296–302. *Leptocoris lepida*, 296–298, 300, ♂, 299, 301, 302, ♀. 296, head, dorsal view; 297, claspers, inner and outer views; 298, terminalia, dorsal view; 299, terminalia, ventral view; 300, aedeagus (inflated), ventral view; 301, ovipositor, ventral view; 302, same, dorsal view.

Body short and slim, pale unicolourous. Head elongate (Text-fig. 296); occipital suture complete; paraclypeae elongated and cylindrical with pointed apices. Antennae pale, tinged with black, underside of basal segments and bases of each segment pale. Rostrum short, reaching apices of second coxae. Lateral black line faint on sides of antenniferous tubercles, extending on to collar like a black dot. Pronotal disc punctate, pale, sometimes tinged with green; brownish black spots on posterior angles present. Legs uniformly pale, with articulations between femora, tibiae and tarsi black. Hemelytra pale unicolourous. Posterior margin of seventh abdominal tergum with a very small rounded projection; pygophore round (Text-fig. 298).

♂ GENITALIA: Claspers with long blades and with curved and pointed apices (Text-fig. 206); both dorsal and ventral pairs of thecal appendages present, with symmetrical sac-like, broad ventral appendages (Text-fig. 220); four lateral conjunctival appendages as in Text-fig. 300; frontal conjunctival appendage without any sclerotized piece (Text-fig. 220,A); three right lateral conjunctival appendages, with second short, straight and thick only in middle (Text-fig. 220,F); membranous appendage with a spiculed, cap-shaped terminal and a short, curved and acutely pointed dorsal appendage.

♀. Very similar to ♂ in general appearance and measurements; posterior margin of seventh abdominal sternum sinuately emarginate (Text-fig. 299).

♀ GENITALIA: First gonocoxae short, broad, rounded at apices (Text-fig. 299); six pairs of intervalvular sacs (Text-fig. 302); spermatheca short, pointed at apex, with a median flange and a short coiled tube (Text-fig. 234).

Type material. Holotype ♂, without data, labelled "*Leptocorisa lepida* Bredd.", "Type!", Coll. Breddin, Dtsch. Entom. Inst., Berlin.

Other material. INDIA: 2 ♂, 2 ♀; BHUTAN: 45 ♂, 35 ♀; BURMA: 1 ♂; THAILAND: 2 ♂, 2 ♀.

This species is common in India (U.P.) and its range extends in the east as far as Thailand. The adults have been collected in April, September and December.

This species is very close to *L. pseudolepida* sp. n. and *L. luzonica* sp. n. and shares with them the character of small size of the body (less than 12 mm. in length). It can be separated from them by the long and cylindrical paraclypeae, which are pointed at their apices and by other genital characters (see above).

Leptocorisa luzonensis sp. n.

(Text-figs. 205, 219, 233, 247, 261 and 303-307)

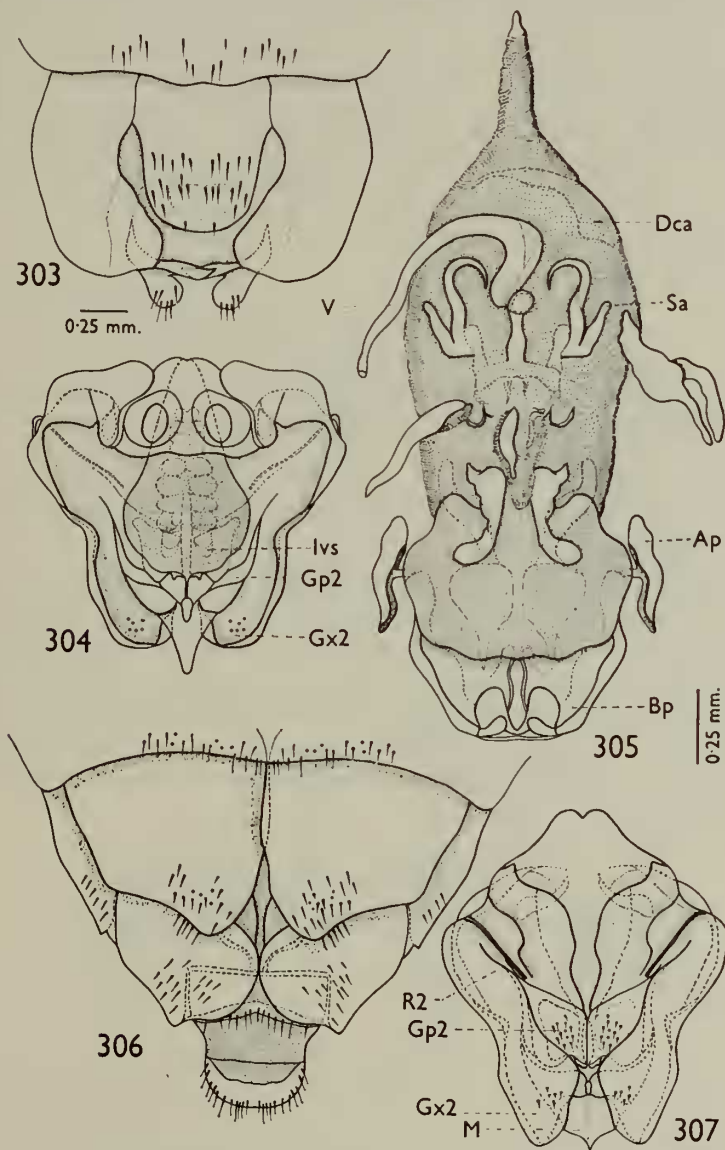
Characterized by apical antennal segments, which are equal to or longer than second and third segments together and by the form of ♂ and ♀ genitalia.

♂. Body length, 17.0-17.5 mm., width, 2.6-2.8 mm. Head length, 1.9-2.0 mm., width, 1.6-1.8 mm. Antennae, segment I, 4.8-5.1 mm., II, 2.8-3.0 mm., III, 3.5-3.7 mm., IV, 6.5-6.7 mm. Rostrum, segment I, 1.5-1.7 mm., II, 1.5-1.7 mm., III, 0.8-0.9 mm., IV, 0.7-0.75 mm. Pronotum, length, 2.6-2.8 mm., width, 2.6-2.7 mm. Hind femora, 7.0-7.2 mm. Hind tibia, 7.5-7.6 mm. Distance between the ocelli, 0.5 mm., distance between an ocellus and an eye, 0.7-0.75 mm.

Species robust, yellowish brown. Head elongated, with two brownish black spots behind ocelli; occipital suture medially concave; paraclypeae short, with rounded apices. Antennae brownish black, with basal three-quarters of first segments, apices of second and third and bases of apical segments, pale. Rostrum short, reaching apices of second coxae. Lateral black

line extending from sides of antenniferous tubercles on to collar. Pronotal disc pale, with black spots on posterior angles. Legs pale, with apices of femora and bases of tibiae and tarsi black. Hemielytra pale unicolourous. Posterior margin of seventh abdominal tergum medially convex, pygophore large with thin lobes of ninth segment (Text-fig. 303).

♂ GENITALIA : Claspers with very short blades, apices pointed (Text-fig. 205) ; both dorsal and ventral pairs of thecal appendages present, ventral pair symmetrical as in Text-fig. 305 ;



FIGS. 303-307. *Leptocoris luzonensis*, 303, 305, ♂, 304, 306-307, ♀. 303, terminalia, dorsal view ; 304, ovipositor, dorsal view ; 305, aedeagus (inflated), ventral view ; 306, terminalia, ventral view ; 307, ovipositor, ventral view.

left lateral conjunctival appendage curved near apex (Text-fig. 219, E) ; frontal conjunctival appendage with two sclerotized pieces (Text-fig. 219, A) ; the only right lateral conjunctival appendage bilobed with a very thick main stem (Text-fig. 219, F) ; membranous appendage long, with a short triangular terminal and a bow-shaped, pointed dorsal appendage (Text-fig. 305).

♀. Body length, 17.5–18.0 mm., width, 2.65–2.8 mm. Head length, 2.0–2.2 mm., width, 1.8–1.9 mm. Antennae, segment I, 4.8–5.0 mm., II, 2.8–3.0 mm., III, 3.5–3.7 mm., IV, 6.5–6.7 mm. Rostrum, segment I, 1.6–1.8 mm., II, 1.6–1.8 mm., III, 0.9–1.0 mm., IV, 0.7–0.8 mm. Pronotum, length, 2.6–2.8 mm., width, 2.65–2.80 mm. Hind femora, 7.2–7.4 mm. Hind tibia, 7.8–8.0 mm. Distance between ocelli, 0.45–0.55 mm., distance between an ocellus and an eye, 0.75–0.85 mm.

Usually slightly more robust than ♂ ; posterior margin of seventh abdominal sternum emarginate, with a very small median projection (Text-fig. 306).

♀ GENITALIA : First gonocoxae broad, outer margin sinuate (Text-fig. 247) ; eleven pairs of intervalvular sacs (Text-fig. 304) ; spermatheca elongated with a median flange and a short coiled tube of different thicknesses (Text-fig. 233).

Holotype ♂, PHILIPPINE ISLANDS : North Luzon, Los Baños, 21.i.1914 (*G. Bottcher*) B.M.(N.H.).

Paratypes. 1 ♂, 4 ♀, with some data as holotype, B.M.(N.H.), North Luzon, Los Baños, 1 ♂, (*P. I. Baker*), Mus. Hels., 1 ♂, without any date, Riksmus. Stockholm, Luzon, Mt. Maquilang, Elev. 50 m., 3.ix.1949 (*Boscós*), Moravian Mus., Berne.

This species is probably localized in Philippine Islands and has not been found in any other part of Oriental regions. Adults have been collected in the months of January and September.

This species is closely allied to another, slightly more widely distributed species, *L. tagalica*, and shares the characters of black apices of femora, and bases of tibiae and tarsi ; however the ♂ can easily be separated by very short and pointed blades of claspers (very long and cylindrical in *tagalica*) and the ♀ by small, convex median projection of seventh abdominal sternum (a large median projection in *tagalica*) and by first gonocoxae curved near apices. This species can be separated from all other species of this genus by long apical antennal segments, which are at least as long as or longer than second and third together.

Leptocorisa luzonica sp. n.

(Text-figs. 208, 222, 236, 250, 264 and 308–314)

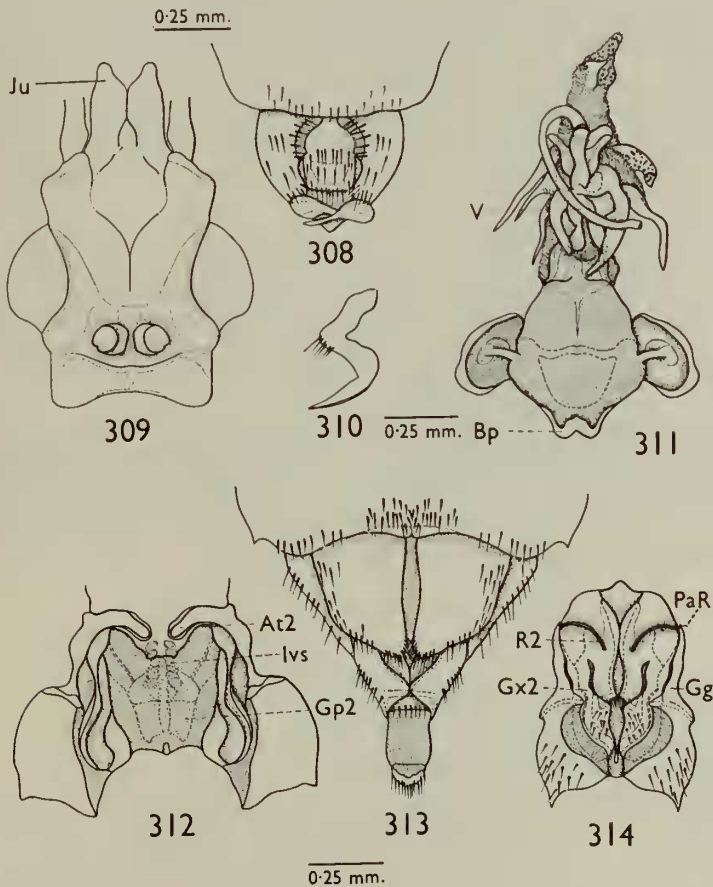
Characterized by small body, straight and blunt paraclypeae and by the form of ♂ and ♀ genitalia.

♂. Body length, 11.3–11.5 mm., width, 1.5–1.6 mm. Head length, 1.5–1.7 mm., width, 0.8–1.0 mm. Antennae, segment I, 2.9–3.0 mm., II, 1.7–1.8 mm., III, 2.0–2.4 mm., IV, 4.0–4.2 mm. Rostrum, segment I, 1.0–1.1 mm., II, 1.0–1.1 mm., III, 0.5–0.6 mm., IV, 0.6–0.7 mm. Pronotum, length, 1.7–1.8 mm., width, 1.5–1.6 mm. Hind femora, 5.0–5.2 mm. Hind tibia, 5.2–5.3 mm. Distance between ocelli, 0.4 mm., distance between an ocellus and an eye, 0.7 mm.

Species of small size, pale, unicolourous. Head comparatively short, occipital suture rather invisible at sides (Text-fig. 309) ; paraclypeae straight, thick at base, with rounded apices.

Antennae sometimes with brownish tinge, apices of second segments and apical segments brownish only pale at bases. Rostrum short, hardly reaching apices of second coxae. Lateral black line usually faint at sides of antenniferous tubercles and like a black dot on sides of collar. Pronotal disc pale, unicolourous, black spots on posterior angles rather faint, legs pale, unicolourous. Hemielytra pale. Posterior margin of seventh abdominal tergum truncated, very slightly medially produced; pygophore rounded with pointed apices (Text-fig. 308).

♂ GENITALIA: Claspers laterally with short blades and curved sharp apices (Text-fig. 208); both dorsal and ventral pairs of thecal appendages present, ventral appendages symmetrical, sac-like with sclerotized linings (Text-fig. 222, D); four left lateral conjunctival appendages as in Text-fig. 311; frontal conjunctival appendage with two sclerotized pieces (Text-fig. 222, A); only two right lateral conjunctival appendages, second long and strongly curved in middle (Text-fig. 222, F); membranous appendage with two terminal appendages and a flat dorsal conjunctival appendage as in Text-fig. 311.



FIGS. 308-314. *Leptocoris luzonica*, 308-311, ♂, 312-314, ♀. 308, terminalia, dorsal view; 309, head, dorsal view; 310, claspers, inner view; 311, aedeagus (inflated), ventral view; 312, ovipositor, dorsal view; 313, terminalia, ventral view; 314, ovipositor, ventral view.

♀. Body length, 11.5–12.0 mm., width, 1.7–1.9 mm. Head, length, 1.7 mm., width, 1.2 mm. Antennae, segment I, 3.5–3.7 mm., II, 2.0–2.2 mm., III, 2.6–2.8 mm., IV, missing. Rostrum, segment I, 1.0 mm., II, 1.0 mm., III, 0.6 mm., IV, 0.6 mm. Pronotum, length, 1.7–2.0 mm., width, 1.7–1.9 mm. Hind femora, 6.0 mm. Hind tibia, 6.0 mm. Distance between ocelli, 0.3–0.4 mm., distance between an ocellus and an eye, 0.5–0.7 mm.

Slightly robust, posterior margin of seventh abdominal sternum deeply emarginate medially, slightly convex (Text-fig. 313).

♀ GENITALIA : First gonocoxae elongated, curved in middle (Text-fig. 250) ; seven pairs of intervalvular sacs (Text-fig. 312) ; spermatheca long and cylindrical, thinner in middle with a long coiled tube (Text-fig. 236).

Holotype ♂, PHILIPPINE ISLANDS : Luzon, Manginin, 17.ix (G. Bottcher), B.M. (N.H.).

Paratypes. PHILIPPINE ISLANDS : 3 ♂, 2 ♀, same data as holotype, B.M.(N.H.), Mindanao, Sulu, near base of Mt. Dahao Jolo 1, 150 m., 11 ♂, 12 ♀, 2.ix.1958 (Milliron), Bern. Bishop Mus. ; VIETNAM : Tonkin, Choganh, Hoa-Binh, 5 ♂, 1 ♀, 1919 (J. De Cooman, L. Duporte, R. Oberthur) Mus. Hist. nat Paris ; SARAWAK : Kuching, Santubong, 797–1,500 m., 41 ♂, 45 ♀, 18–30.vi.1958 (T. C. Maa), Bern. P. Bishop Mus., K. S. Road, 19½ miles, Tarat Station, 10th mile Bau Rd., 18th mile K. S. Rd. on grasses near wet paddy, 105 ♂, 95 ♀, 13.iii.1963 (S. K. Hueh, R. Lav), Dept. Agric., Sarawak.

This species is found in Vietnam in the west, Philippine Islands in the east and Borneo in the south. The adults have been collected in March, June and September but it seems to be most abundant in March and September. This species has also been reported feeding on grasses near paddy fields, but probably does not commonly feed on paddy or this would have been recorded.

This species is close to *L. lepida* Breddin and *L. pseudolepida* sp. n., its allopatric allies, in having small size of the body (less than 12 mm.) but can easily be separated from them by the shape of the paraclypeae, which are straight, thicker in the middle and rounded at the apices. The conjunctival appendages of the aedeagus, the first pair of gonocoxae in ♀ and the shape of the spermatheca confirm its identity.

Leptocoris oratorius (Fabricius)

(Text-figs. 197, 211, 225, 239, 253 and 315–320)

Gerris oratorius Fabricius, 1794 : 191, 1803 : 261

Leptocoris bengalensis Westwood, 1842 : 18

Rhabdocoris arcuata Kolenati, 1845 : 67

Myodochus trinotata Herrich Schäffer, 1848 : 95

Leptocoris maculiventris Dallas, 1852 : 484

Leptocoris (*Rhabdocoris*) *acuta* (Thunberg) ; Distant, 1902 : 410, China, 1924 : 237 [Mis-identifications]

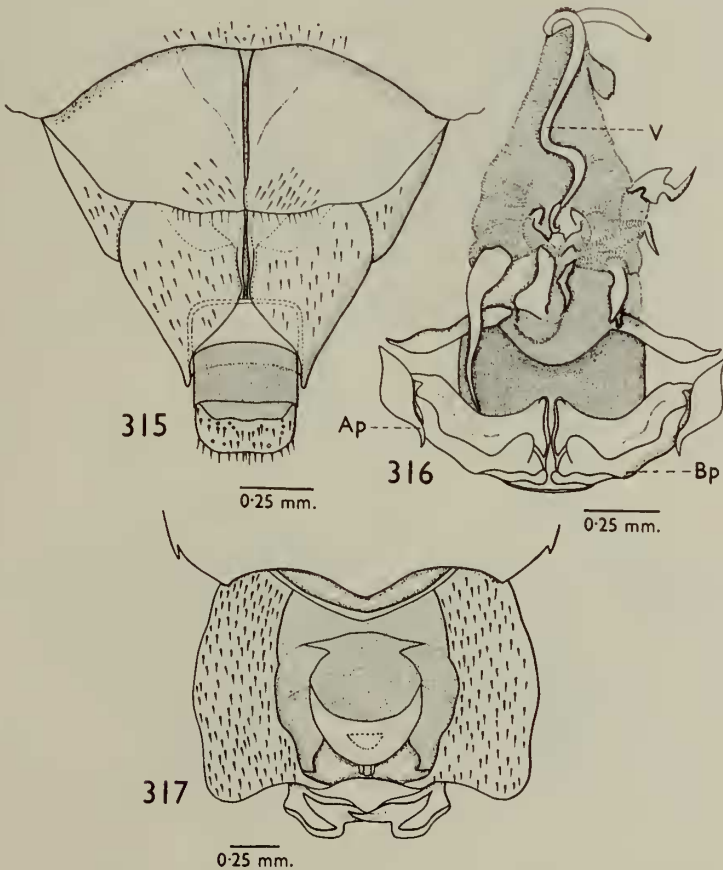
Characterized by the robust body, series of brownish black dots on the ventrolateral side of abdomen and by the form of ♂ and ♀ genitalia.

♂. Body length, 18.0–18.5 mm., width, 2.9–3.0 mm. Head length, 2.4–2.6 mm., width, 1.8–2.0 mm. Antennae, segment I, 5.0–5.2 mm., II, 3.4–3.5 mm., III, 3.9–4.0 mm., IV, 5.6–6.0 mm. Rostrum, segment I, 1.9 mm., II, 1.9 mm., III, 1.0 mm., IV, 0.9 mm. Pronotum,

length, 3.1–3.5 mm., width, 2.9–3.0 mm. Hind femora, 6.7 mm. Hind tibia, 7.6 mm. Distance between ocelli, 0.6–0.7 mm., distance between ocellus and outer margin of eye, 0.8 mm.

Body robust, pale unicolourous. Head elongated; occipital suture medially concave; paraclypeae short and pointed. Antennae usually pale, unicoloured, rarely with brownish black tinge. Rostrum short, reaching only the apices of second coxae. Lateral black line on the sides of head and propleuron absent. Pronotal disc pale unicolourous, posterior angles without black spots. Legs usually pale unicoloured, rarely tinged with black. Hemielytra pale. A series of ventro-lateral brownish black spots on abdomen usually prominently present, rarely faint. Posterior margin of seventh abdominal tergum medially convex; pygophore very large and almost rectangular in form (Text-fig. 317).

♂ GENITALIA: Claspers curved and tapering to a point at apices (Text-fig. 197); both dorsal and ventral pairs of thecal appendages present, ventral pair symmetrical as in Text-fig. 316; left lateral conjunctival appendage elongated, curved at base and apex (Text-fig. 211, E); frontal conjunctival appendage with two sclerotized pieces as in Text-fig. 211, A; two right lateral conjunctival appendages, second bifid at apex (Text-fig. 211, F); membranous appendage usually with a bulbous or pointed terminal appendage and a hooked bilobed dorsal conjunctival appendage (Text-fig. 316).

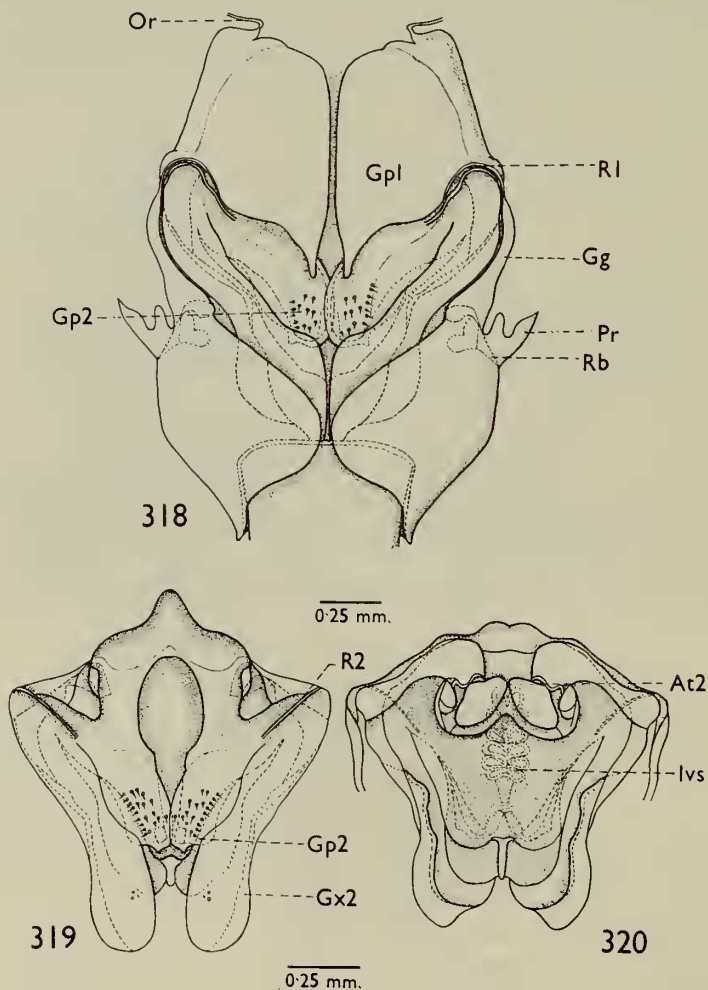


FIGS. 315–317. *Leptocorisa oratorius*. 315, ♀ terminalia, ventral view; 316, aedeagus (inflated), ventral view; 317, ♂ terminalia, dorsal view.

♀. Very similar to ♂ in general appearance and measurements ; posterior margin of seventh abdominal sternum emarginate, very slightly convex in middle (Text-fig. 315).

♀ GENITALIA : First gonocoxae elongated, about three times as long as broad, apices pointed (Text-fig. 239) ; six pairs of intervalvular sacs (Text-fig. 320) ; spermatheca thick in middle with a median flange, round and coiled tube (Text-fig. 225).

Type material. Holotype ♂ of *Gerris oratorius* Fabricius, SUMATRA : (Daldorff), with label "Mus. de Johstedt", "*Gerris oratorius* Fabricius, s. : *G. varicornis* Fabr." "Teste Stal", Zool. Mus. Copenhagen ; cotype ♀ of *G. angustata* Fabricius 1787, without data, Zool. Mus. Copenhagen ; holotype ♂ of *Leptocorisa bengalensis* Westwood, 1842, INDIA : Bengal, Hope Dept., Univ. Mus., Oxford ; holotype ♂,



FIGS. 318-320. *Leptocorisa oratorius*, ♀. 318, ovipositor, with 9th paratergite, ventral view ; 320, same, dorsal view.

Rhabdocoris arcuata Kolenati, 1845, without data (R. A. Kywakeeuya), with label "*Rhabdocoris arcuatus* Klti", "Mel II, 67", Zool. Mus. Leningrad; 1 ♂, CHINA: Komai (Sanganchu) in Tibet, with label "trinotatus" "Herrich Schäffer, fig. 863", Riksmus. Stockholm.

Other material. CEYLON: 5 ♂, 1 ♀; INDIA: 23 ♂, 18 ♀; NICOBAR ISLAND: 4 ♂; PAKISTAN: 1 ♂, 2 ♀; BHUTAN: 40 ♂, 25 ♀; BURMA: 1 ♀; THAILAND: 19 ♂, 13 ♀; VIETNAM: 32 ♂, 28 ♀; MALAYA: 5 ♂, 3 ♀; SINGAPORE: 1 ♂; SUMATRA: 1 ♂; JAVA: 38 ♂, 18 ♀; SARAWAK: 40 ♂, 37 ♀; CELEBES: 2 ♂, 2 ♀; PHILIPPINE ISLANDS: 157 ♂, 128 ♀; AUSTRALIA: 4 ♂, 4 ♀; SOLOMON ISLANDS: 2 ♀.

The range of this species extends in the west into Ceylon, in the north to Malabar, Sylhet (East Pakistan), Bhutan, China (Komai in Tibet) in the south into North Queensland (Australia) and in the east as far as Solomon Islands.

Uichanco (1921) has stated that its common name in India, China and Java is "Waleng sangeet", but in the Philippines, it is called by various common names such as Tagalog, Bicol, Visayun, Pangasinan, Panpanga, Ilacano and Moro. It is a serious rice pest in the Far East countries and, to quote Uichanco, "of the insect enemies of rice there is probably none that is so well known among the Filippino planters as the rice bug *Leptocorisa acuta* Thunberg". The figure he gives of the pygophore makes it clear that he was referring to this species and not *L. acuta* s. str. He has estimated that in abundance, it destroys at times over one-half of the season's crop. It causes the greatest damage in the months of November and December, when the rainy season rice is in the milk stage. Its life history has also been studied by Koningsberger (1903) and Zehntner under the name of *Leptocorisa acuta* (Thunberg). It has also been collected at light in Java.

This species is close to *L. acuta* (Thunberg) and *L. chinensis* Dallas but can easily be separated by a series of ventro-lateral black dots on abdomen. In ♂ the claspers which posteriorly taper into a point and in the ♀ the first pair of elongated and pointed gonocoxae are its peculiarities.

Stål (1873) synonymized the following species:

Cimex acuta Thunberg, *Cimex angustata* Fabricius 1787, *Gerris oratorius* Fabricius 1794, *Leptocorisa bengalensis* Westwood 1842, *Rhabdocoris arcuata* Kolenati 1845, *Myodochnus trinotata* Herrich Schäffer 1848 and *Leptocorisa maculiventris* Dallas 1852. During the present study the holotype of *acuta* Thunberg has been examined and because of its damaged abdomen, another male specimen (from type locality) and with Stål's label "*Cimex acutus* Thunb. ! Mus. Thunb." has been designated neotype of *C. acuta* Thunberg (see page 80). The type of *C. angustata* Fabricius has been found to be identical with *C. acuta* Thunberg. The types of *Gerris oratorius* Fabricius, *Leptocorisa bengalensis* Westwood and *Rhabdocoris arcuata* Kolenati all differ from the type of *acuta* (*J. S. varicornis*) and represent the modern concept of *L. acuta* China nec Thunberg 1783. This *acuta* auctt., which is now without a name, should take the name of the most senior synonym, i.e. *Gerris oratorius* Fabricius 1794. The types of *M. trinotata* Herrich Schäffer 1848 and *L. maculiventris* Dallas could not

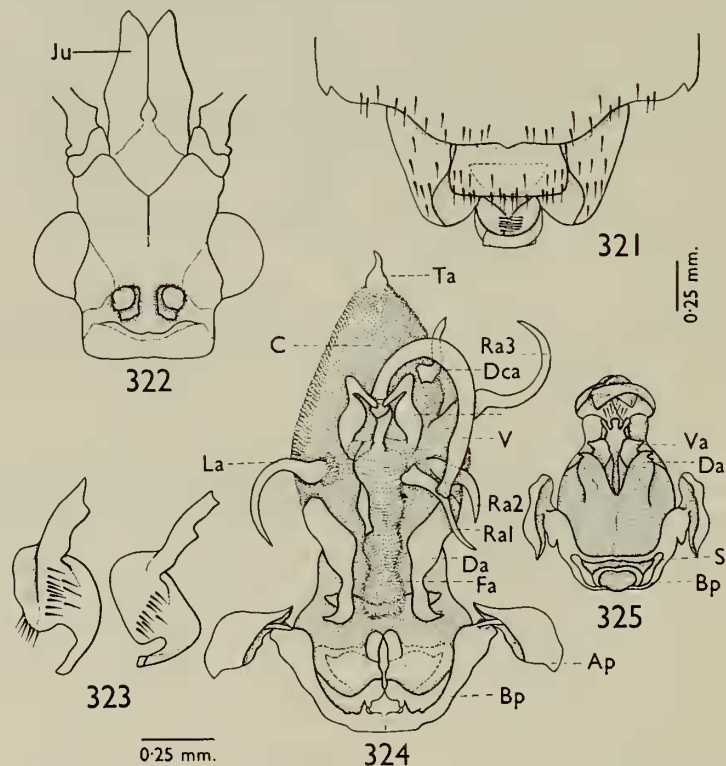
be examined. Dr. Forster (Zoologische Sammlung des Bayerischen Staates) has informed me that the type of *M. trinotata* Herrich Schäffer was destroyed during an air raid in 1944, and Dr. W. E. China (British Museum) has told me that the type of *L. maculiventris* Dallas must be presumed lost. However the original description and diagram (Fig. 863) of Herrich Schäffer for *trinotata* and the original description of *L. maculiventris* Dallas agree with the holotype of *Gerris oratorius* Fabricius.

***Leptocorisa palawanensis* sp. n.**

(Text-figs. 201, 215, 229, 243, 257 and 321-328)

Characterized by very long and pointed paraclypeae which are only very slightly less than half of entire head length, by rostrum, which extends beyond the apices of second coxae and by the form of genitalia.

♂. Body length, 14.9 mm., width, 2.30 mm. Head length, 2.2 mm. (only paraclypeae 0.83 mm.), width, 1.5 mm. Antennae, segment I, 4.7 mm., II, 3.0 mm., III, 3.3 mm., IV, 5.7 mm. Rostrum, segment I, 1.7 mm., II, 1.5 mm., III, 0.8 mm., IV, 0.8 mm. Pronotum, length, 2.6 mm., width, 2.3 mm. Hind femora, 6.9 mm. Hind tibia, 7.3 mm. Distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.8 mm.

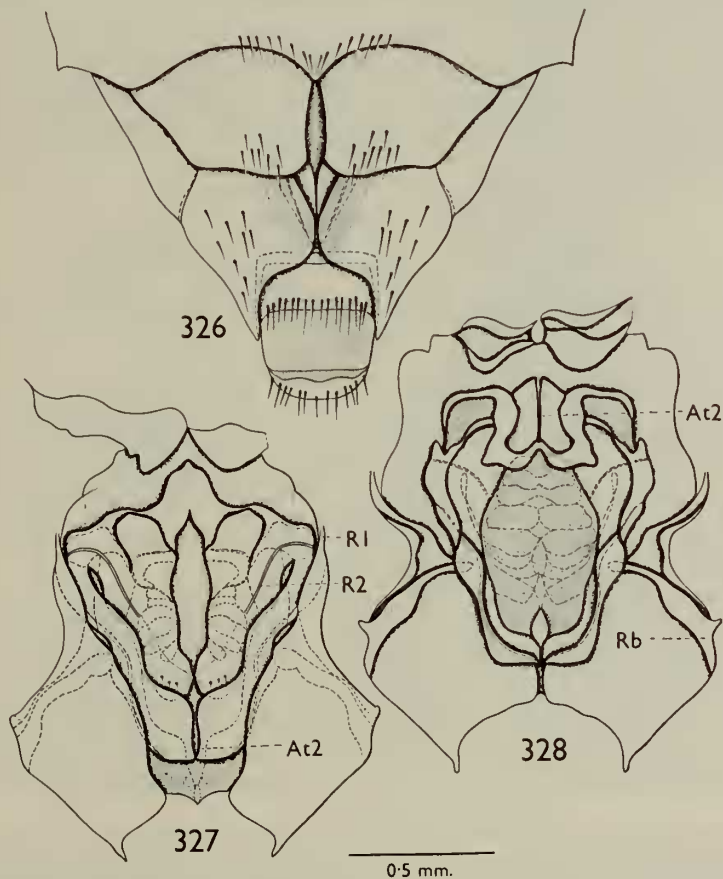


FIGS. 321-325. *Leptocorisa palawanensis*, ♂. 321, terminalia, dorsal view; 322, head, dorsal view; 323, claspers, inner and outer views; 324, aedeagus (inflated), ventral view; 325, theca, dorsal view.

Body cylindrical, pale. Head elongate; occipital suture smoothly medially concave; paraclypeae very long, cylindrical and pointed. Antennae with basal segments pale, only black at apices, second, third and fourth segments black, only pale at bases. Rostrum long, extending beyond apices of second coxae. Lateral black line faint on the sides of head, represented only by a black dot on either side of collar. Pronotal disc light brown, sometimes with greenish tinge; brownish black spots on posterior angles present. Legs pale, with usually apices of femora, tibiae and tarsi black. Hemielytra pale. Posterior margin of seventh abdominal tergum sinuate, with a very small pointed median projection; pygophore round (Text-fig. 321).

♂ GENITALIA: Claspers truncated and thick at apices with very short blades (Text-fig. 201); both dorsal and ventral pairs of thecal appendages present, ventral appendages bilobed and symmetrical (Text-fig. 325); left lateral conjunctival appendage strongly curved and pointed (Text-fig. 215, E); frontal conjunctival appendage with only one sclerotized piece (Text-fig. 215, A); three right lateral conjunctival appendages as in Text-fig. 324, second smaller, curved in middle and pointed (Text-fig. 215, F); membranous appendage short, with a hooked terminal and a curved dorsal conjunctival appendage (Text-fig. 324).

♀. Very similar to ♂ in general appearance and measurements, posterior margin of seventh abdominal sternum emarginate with a small pointed median projection (Text-fig. 326).



FIGS. 326-328. *Leptocoris palawanensis*, ♀. 326, terminalia, ventral view; 327, ovipositor, ventral view; 328, same, dorsal view.

♀ GENITALIA : First gonocoxae small, outer margin convex, apices rounded (Text-fig. 243) ; seven pairs of intervalvular sacs (Text-fig. 328) ; spermatheca with a long coiled tube and a median flange (Text-fig. 229).

Holotype ♂, PHILIPPINE ISLANDS : N. Palawan, Binaluan, xi-xii.1913 (*G. Roettcher*), B.M.(N.H.).

Paratypes. PHILIPPINE ISLANDS : 1 ♂ (*Semper*), Riksmus. Stockholm, Mindanao, Iligan, 1 ♂ (*Baker*), Mus. Hels., Mindanao, Misamis, Sulu, Palawan, 3.2 km. south of Tarumpitao, 2.vi., 20.vii., 7.ix., 19-20.x.1958 (various collectors), Bern. P. Bishop Mus. ; NEW GUINEA : Papua, West District Orimo, Govt. Sta., 26-28.x.1960 (*J. L. Gressitt*), Bern. P. Bishop Mus. ; AUSTRALIA : Queensland, 1 ♂ (*Mjöberg*), Riksmus. Stockholm.

The range of this species extends in the north west into Philippine Islands and in the south east into northern Australia (Queensland). The adults have been collected in the late part of the year from June to December.

This species is very close to *L. acuta* (Thunberg) and *L. discoidalis* Walker but can easily be separated from them by very long (about half the length of the head), cylindrical and pointed paraclypeae. In the aedeagus, the bilobed symmetrical ventral thecal appendages and in the spermatheca the tube, which is twisted at its base, are its peculiarities.

Leptocoris pseudolepida sp. n.

(Text-figs. 207, 221, 235, 249, 263 and 329-335)

Characterized by very small size of the body, by short, thick and pointed paraclypeae and by the form of ♂ and ♀ genitalia.

♂. Body length, 11.5-12.0 mm., width, 1.6-1.9 mm. Head length, 1.5-1.7 mm., width, 1.2-1.3 mm. Antennae, segment I, 3.6-4.0 mm., II, 2.2-2.4 mm., III, 2.4-2.8 mm., IV, 4.0-4.2 mm. Rostrum, segment I, 1.0-1.1 mm., II, 1.1-1.2 mm., III, 0.6-0.7 mm., IV, 0.6-0.7 mm. Pronotum, length, 1.7-2.0 mm., width, 1.7-1.9 mm. Hind femora, 5.0-6.2 mm. (specimen from Malacca or Borneo with smaller hind femora (5.0-5.2 mm.) from Selangor, Kuala Lumpur (6.2 mm.)). Hind tibia, 5.6-6.5 mm. (specimens from Borneo or Malacca 5.6-5.8 mm. and from Kuala Lumpur 6.5 mm.). Distance between ocelli, 0.3-0.4 mm., distance between an ocellus and an eye, 0.5-0.6 mm.

Body short, pale, tinged with black. Head short, occipital suture complete (Text-fig. 329) ; paraclypeae short, thick at base, curved near apices and pointed. Antennae usually brownish black, with basal segments pale, only black at apices, second, third and fourth segments brownish black, only pale at their bases. Rostrum short, reaching apices of second coxae. Lateral black line faint on sides of head, only represented on sides of head by a black dot. Pronotal disc pale, unicoloured, sometimes with brownish tinge. Legs usually black, only femora pale. Hemielytra pale. Abdomen dorsally palish brown, connexiva and venter pale, ochraceous. Posterior margin of seventh abdominal tergum truncated, pygophore rounded, apex pointed (Text-fig. 332).

♂ GENITALIA : Claspers never extending beyond posterior margin of pygophore, dorsally rounded (Text-fig. 332), apices truncated (Text-fig. 207) ; both dorsal and ventral thecal appendages present as in Text-fig. 331, ventral, symmetrical ; four lateral conjunctival appendages as in Text-fig. 331 ; frontal conjunctival appendage with two elongated sclerotized pieces (Text-fig. 221, A) ; three right lateral conjunctival appendages (Text-fig. 331) ; second straight,

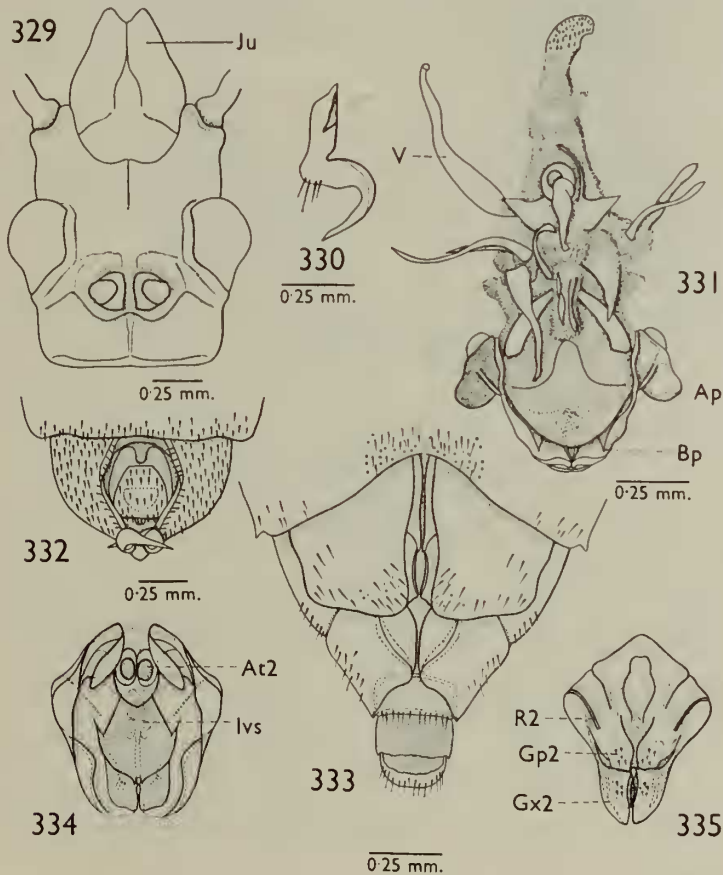
thick at base and pointed at apex (Text-fig. 221, F) ; membranous appendage with a cap-like terminal and a thin curved dorsal appendage (Text-fig. 331).

♀. Very similar to ♂ in general appearance and measurements ; posterior margin of seventh abdominal sternum deeply emarginate (Text-fig. 333).

♀ GENITALIA : First gonocoxae small and with outer margin sinuate (Text-fig. 249) ; five pairs of intervalvular sacs (Text-fig. 334) ; spermatheca broad at apex, with a median flange and a long coiled tube.

Holotype ♂, MALAYA : Selangor, Kuala Lumpur, 17th mile Chesar Rd., at light, 17.i.1924 (*E. Seimond*), B.M.(N.H.).

Paratypes. CEYLON : 2 ♂, 1 ♀, B.M.(N.H.) ; MALAYA : Malacca (*Keranton*), with labels "*Leptocoris lepida* Bredd.", "Coll. Breddin", Dtsch. Entom. Inst., Berlin ; INDIA : S. Malabar, 4 ♂, 3 ♀ (various collectors), B.M.(N.H.) ; BORNEO : (south east), 1 ♂, 1 ♀, 1895 (*Atkinson coll.*), Hope Dept., Univ. Mus., Oxford.



FIGS. 329-335. *Leptocoris pseudolepida*, 329-332, ♂, 333-335, ♀. 329, head, dorsal view ; 330, claspers, inner and outer views ; 331, aedeagus (inflated), ventral view ; 332, terminalia, dorsal view ; 333, terminalia, ventral view ; 334, ovipositor, dorsal view ; 335, same, ventral view.

The range of this, possibly rather rare, species extends in the west into Ceylon and in the east into south east Borneo. The adults have been collected in January. This species has also been collected at light in Malaya (Selangor State).

This species is close to *L. lepida* Breddin and *L. luzonica* sp. n., but can easily be separated from them by its short, thick, curved and pointed paraclypeae (Text-fig. 329). In aedeagus, its elongated, ventral thecal appendages (Text-fig. 221, D), long and straight second right lateral conjunctival appendage (Text-fig. 221, F) and in the ♀ the deep emarginate posterior margin of seventh abdominal sternum (Text-fig. 333) are its peculiarities.

***Leptocoris sakdapolrakae* sp. n.**

(Text-figs. 210, 224, 238, 252, 266 and 336-341)

Characterized by short but cylindrical and pointed paraclypeae, long rostrum, which extends well beyond the apices of second coxae and by the form of the ♂ and ♀ genitalia.

♂. Body length, 13.06-15.2 mm., width, 1.8-2.1 mm. Head length, 1.73-2.0 mm., width, 1.3-1.6 mm. Antennae, segment I, 3.6-4.26 mm., II, 2.0-2.8 mm., III, 2.5-3.2 mm., IV, 5.2-5.73 mm. Rostrum, segment I, 1.3-1.6 mm., II, 1.3-1.6 mm., III, 0.6-0.8 mm., IV, 0.6-0.8 mm. Pronotum, length, 2.1-2.3 mm., width, 1.8-2.1 mm. Hind femora, 5.3-6.5 mm. Hind tibia, 6.0-7.3 mm. Distance between ocelli, 0.4-0.46 mm., distance between an ocellus and an eye, 0.73-0.8 mm.

Body slim, light brown, tinged with black. Head short; occipital suture "V"-shaped in middle; paraclypeae short, cylindrical, thicker at base and pointed at apices. Antennae brownish black with basal segments palish brown, apices black, second, third and fourth segments only pale at their bases. Rostrum long, extending well beyond apices of second coxae. Lateral black line, extending from sides of antenniferous tubercles on to collar. Pronotal disc pale, sometimes with greenish tinge posteriorly. Legs usually black, pale near articulations. Hemelytra pale, slightly dark. Posterior margin of seventh abdominal tergum medially convex, pygophore elongated, with thin lobes of ninth segments (Text-fig. 336).

♂ GENITALIA: Claspers in dorsal view, extending beyond posterior margin of pygophore (Text-fig. 336); apices truncated (Text-fig. 210); both dorsal and ventral pairs of conjunctival appendages present, ventral asymmetrical (Text-fig. 337); left lateral conjunctival appendage strongly curved in middle and acutely pointed at apex (Text-fig. 224, E); frontal conjunctival appendage with two sclerotized pieces (Text-fig. 224, A); two right lateral conjunctival appendages as in Text-fig. 338; second long, strongly curved in middle and acutely pointed (Text-fig. 224, F); membranous appendage with a trinagular terminal and a bilobed dorsal appendage (Text-fig. 338).

♀. Very similar to ♂ in general appearance and measurements, highly variable in size; posterior margin of seventh abdominal sternum emarginate, with a small convex median projection (Text-fig. 339).

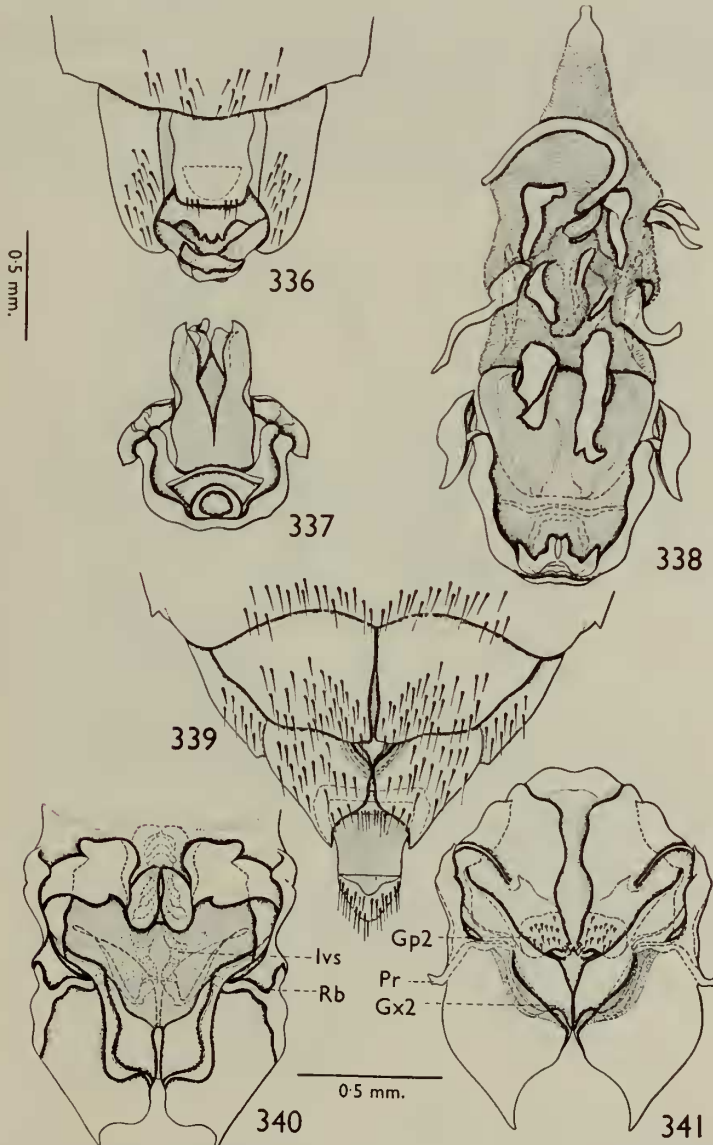
♀ GENITALIA: First gonocoxae elongated, outer margin sinuate, apices rounded (Text-fig. 252); fourteen pairs of intervalvular sacs (Text-fig. 340); spermatheca comparatively very short, elongated with a transverse neck, a median flange and a long coiled tube (Text-fig. 238).

Holotype ♂, JAVA: Carnegie Mus.

Paratypes. JAVA: Sindanglava, 1 ♂, 27.xi.1920, A.M.N.H.; THAILAND: Kaochong, Trang, 1 ♂, 1 ♀, 18.iv.1960 (*Sakdapolrak*), 1 ♂, 1 ♀, with same data as above, "terminalia missing", Coll. Sakdapolrak; MALAYA: Phang, Kuala

Terenggan, 220 m., 25 ♂, 18 ♀, 15.xii.1958 (*J. L. Gressitt*), Bern. P. Bishop Mus. ;
 SUMATRA : Labuan, Bilik, 48 ♂, 42 ♀ (*Palm*), Mus. Hels.

The range of this species extends in the north west into Thailand and in the south east into Java. Adults are probably in greatest abundance in the late part of the year, November and December.



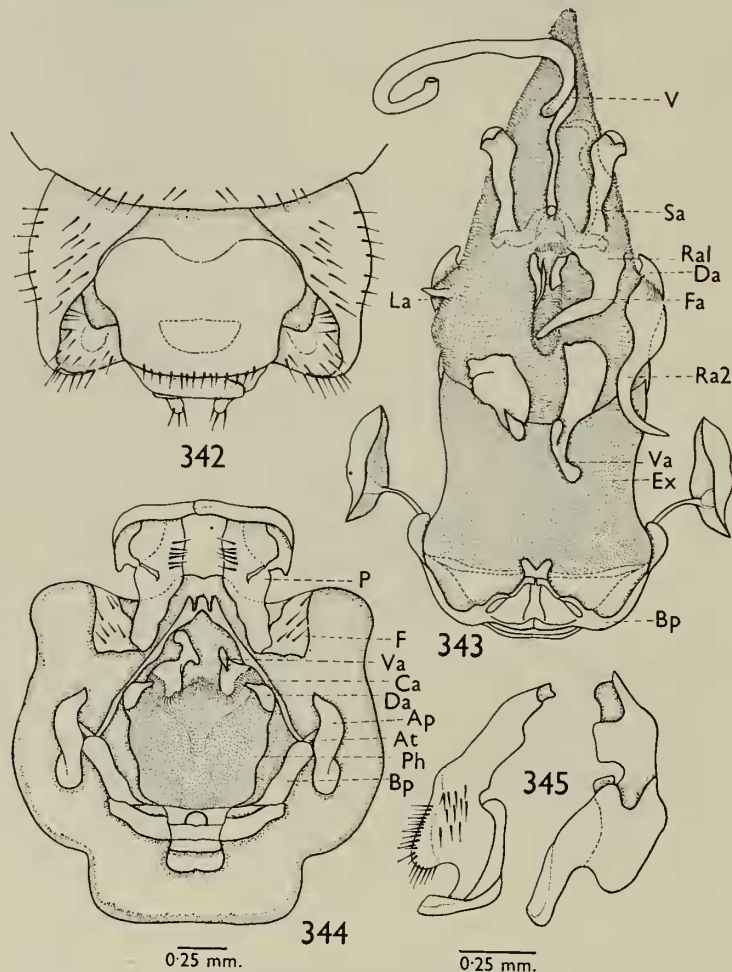
FIGS. 336-341. *Leptocorisa sakdapolvakae*, 336-338, ♂, 399-341, ♀. 336, terminalia, dorsal view ; 337, theca, dorsal view ; 338, aedeagus (inflated), ventral view ; 339, terminalia, ventral view ; 340, ovipositor, dorsal view ; 341, same, ventral view.

This species is close to *L. discoidalis* Walker and *L. acuta* (Thunberg). From the former species it can be very easily separated by rostrum, which does not reach third coxae and from both by the lateral black line, which never extends beyond pronotal collar. Its asymmetrical ventral conjunctival appendages in the aedeagus show its relationship with *L. solomonensis* sp. n. and its very short spermatheca is its peculiarity.

This species is named after Miss N. Sakdapolrak, who discovered it independently and generously made her material available to me.

***Leptocoris solomonensis* sp. n.**

(Text-figs. 209, 223, 237, 251, 265 and 342-345)

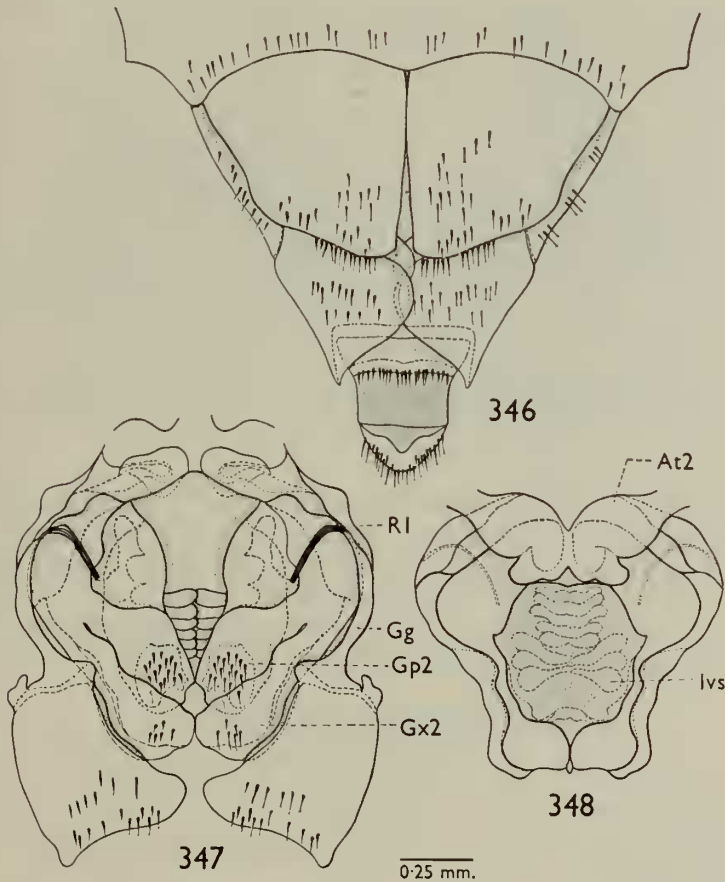


FIGS. 342-345. *Leptocoris solomonensis*, ♂. 342, terminalia, dorsal view ; 343, aedeagus (inflated), ventral view ; 344, theca, dorsal view ; 345, claspers, inner and outer views.

Characterized by the dark black line which extends from the sides of the antenniferous tubercles on to posterior of propleuron, by ventral black median longitudinal line which extends from first to sixth abdominal segment and by the form of the ♂ and ♀ genitalia.

♂. Body length, 16.0–16.5 mm., width, 2.5–2.7 mm. Head length, 2.0–2.4 mm., width, 1.6–1.7 mm. Antennae, segment I, 5.2–5.3 mm., II, 2.5–3.3 mm., III, 3.8–4.0 mm., IV, 5.0–5.2 mm. Rostrum, segment I, 1.7 mm., II, 1.7 mm., III, 1.0 mm., IV, 0.9 mm. Pronotum, length, 2.6–2.9 mm., width, 2.5–2.7 mm. Hind femora, 7.0–7.3 mm. Hind tibia, 8.0–8.2 mm. Distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.8 mm.

Species of medium size, brownish black. Head short, occipital suture medially deeply concave, a black spot visible behind it; paraclypeae short, thick at base and pointed at apices. Antennae brownish black, only bases of each segment pale. Rostrum long, extending well beyond apices of second coxae but never reaching third coxae. Lateral black line extending



FIGS. 346–348. *Leptocoris solomonensis*, ♀. 346, terminalia, ventral view; 347, ovipositor, ventral view; 348, same, dorsal view.

from sides of antenniferous tubercles on to posterior of propleuron. Pronotal disc pale, posterior three-quarters with black punctures, black spots on posterior angles present. Legs light brown, tinged black. Hemelytra pale, tinged with black. Abdomen with dorsum and venter red, a median longitudinal black line extending from first to sixth abdominal venter. Posterior margin of seventh abdominal tergum medially convex; pygophore large, rectangular, with very thin lobes of ninth segment (Text-fig. 342).

♂ GENITALIA: Claspers usually extending beyond posterior margin of pygophore (Text-fig. 342); blades very long with truncated apices (Text-fig. 209); both dorsal and ventral pairs of thecal appendages present, ventral pair asymmetrical (Text-fig. 344); left lateral conjunctival appendage reduced to a spine-like appendage (Text-fig. 223, E); frontal conjunctival appendage with two flat sclerotized pieces (Text-fig. 223, A); two right lateral conjunctival appendages (Text-fig. 343), second curved in middle like an arch (Text-fig. 223, F); membranous appendage with a curved and pointed dorsal appendage, but terminal appendage absent (Text-fig. 343).

♀. Very similar to ♂ in general appearance and measurement; posterior margin of seventh abdominal sternum emarginate, with a small triangular projection in middle (Text-fig. 346).

♀ GENITALIA: First gonocoxae with convex outer margin (Text-fig. 251); intervalvular sacs eight in number, three anterior pairs larger (Text-fig. 348); spermatheca large, flask-shaped with a thick, smoothly curved neck, median flange and a small coiled tube.

Holotype ♂, SOLOMON ISLANDS: Buin, 21.vii.1922 (*E. A. Armytage*), B.M.(N.H.).

Paratypes. SOLOMON ISLANDS: Guadalanal, Lavoro, 2 ♂, 1 ♀, 18.ii.1934 (*H. T. Pagden*), Isles of Savu, 1 ♂, 28.iv.1922 (*E. A. Armytage*), B.M.(N.H.); Bougainville, 1 ♀, (*A. A. Voyce*), labelled "*Leptocoris discoidalis* Walker", det. N. C. E. Miller, S. A. Mus.; NEW GUINEA: Papua, Port Moresby, Bisia tabu, Mt. Lamington, 1,300-1,500 ft., 6 ♂, 5 ♀, 1954 (*W. N. Lock*), S. A. Mus.; Brown River, 5 m., c. District of Otama Plant'n, 1 m. E. of Moresby, 5 ♂, 13 ♀, x.1959, 23.x, 2.xi.1960 (various collectors), Bern. P. Bishop Mus.; NEW IRELAND: Schleinitz Lelet Plateau, 5 ♂, Bern. P. Bishop Mus.

The range of this species seems very restricted to eastern New Guinea (Papua) and the adjacent Solomon Islands. The adults have been collected at most times of the year.

This species is closest to *L. discoidalis* Walker but can be easily separated by black median longitudinal line on the first to the sixth abdominal venter, the rostrum never reaches the third coxae and the pygophore (in the ♂) is comparatively very large and rectangular. Its asymmetrical ventral thecal appendages, the small spine-like second lateral conjunctival appendage, loss of terminal appendage and the elongated large flask-shaped spermatheca are other diagnostic features.

Leptocoris tagalica nom. n.

(Text-figs. 204, 218, 232, 246, 260 and 349-353)

Leptocoris (Rhabdocoris) geniculata China, 1924: 238

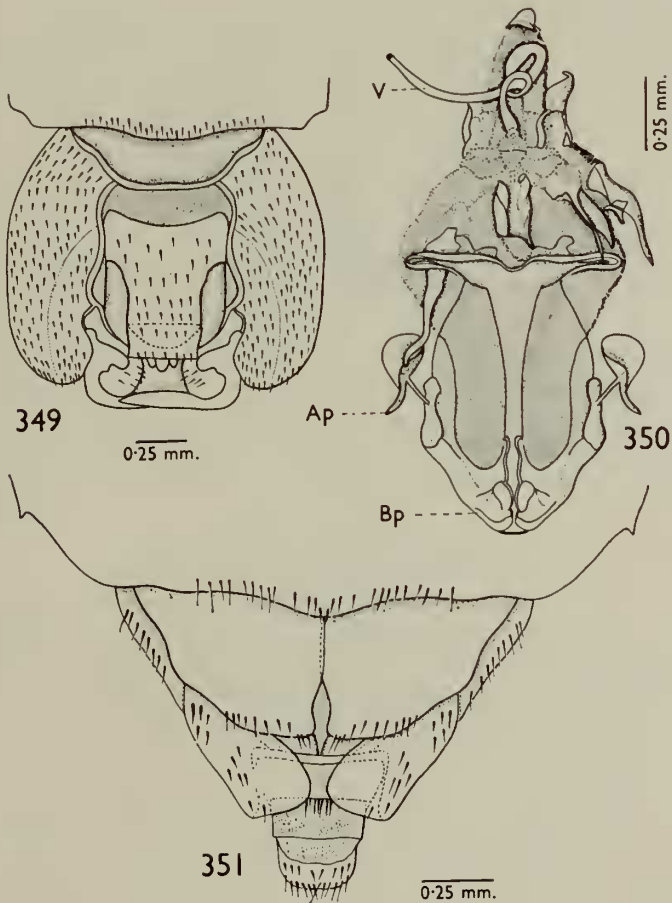
Characterized by pale body, very long cylindrical and pointed claspers and other ♂ and ♀ genital characters.

♂. Body, length, 17.0-17.5 mm., width, 2.5-2.8 mm. Head length, 2.0-2.2 mm., width, 1.6-1.8 mm. Antennae, segment I, 5.2-5.4 mm., II, 3.4-3.6 mm., III, 3.8-3.9 mm., IV, 6.0-6.3 mm. Rostrum, segment I, 1.3-1.4 mm., II, 1.3-1.4 mm., III, 0.7-0.9 mm., IV,

0.7–0.8 mm. Pronotal length, 2.6–2.9 mm., width, 2.5–2.8 mm. Hind femora, 7.0–7.7 mm. Hind tibia, 8.0–8.5 mm. Distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.8–0.9 mm.

Body robust, pale ochraceous, tinged with green. Head elongated, occipital suture medially concave, usually two brownish black spots behind it; paraclypeae short, rounded at apices. Antennae with basal segments pale, black only at bases and apices, second, third and fourth black, only pale at bases. Rostrum short, reaching second coxae. Lateral black line extending from sides of antenniferous tubercles on to pronotal collar. Pronotal disc pale, densely punctate, with brownish black spots on posterior angles. Legs pale, with apices of femora and bases of tibiae prominently black. Hemielytra pale ochraceous. Abdomen with venter of dusty grey colour. Posterior margin of seventh abdominal tergum with a small convex median projection; pygophore large, lobes of ninth segment thick (Text-fig. 349).

♂ GENITALIA: Claspers with short main stems and very long, cylindrical and pointed blades, (Text-fig. 204); both dorsal and ventral pairs of thecal appendages present (Text-fig. 350);



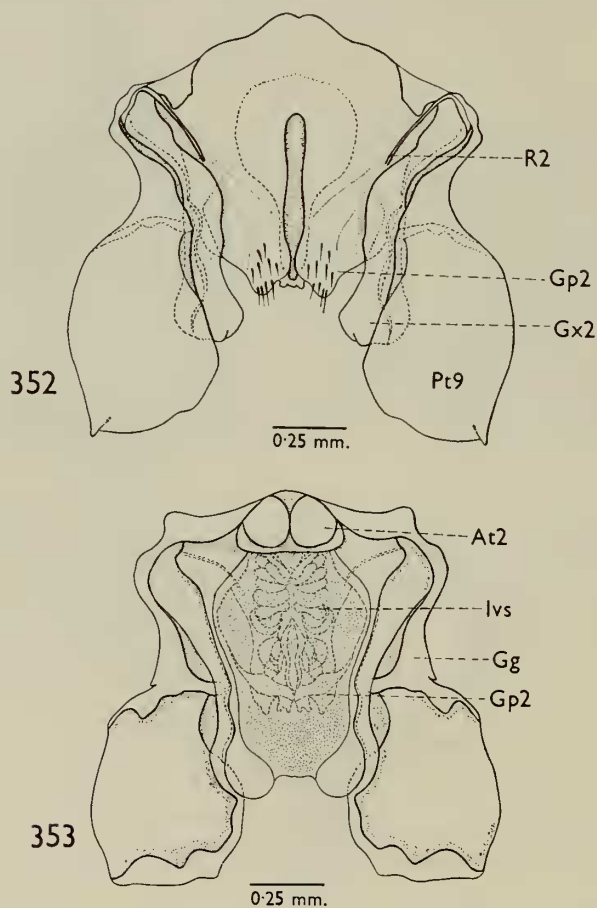
FIGS. 349–351. *Leptocorisa tagalica*. 349, ♂ terminalia, dorsal view; 350, aedeagus (inflated), ventral view; 351, ♀ terminalia, ventral view.

ventral pair symmetrical; left lateral conjunctival appendage curved near apex, pointed (Text-fig. 218, E); frontal conjunctival appendage with two sclerotized pieces (Text-fig. 218, A); three right lateral conjunctival appendages as in Text-fig. 350, second short and thick (Text-fig. 218, F); membranous appendage with a sclerotized cap-like and a dorsal appendage (Text-fig. 350).

♀. Very similar to ♂ in general appearance and measurement; posterior margin of seventh abdominal sternum sinuately emarginate, with a small median rounded projection (Text-fig. 351).

♀ GENITALIA: First gonocoxae broad, outer margin posteriorly concave (Text-fig. 246); thirteen pairs of intervalvular sacs (Text-fig. 353); spermatheca flask-shaped with a median flange and a long coiled tube (Text-fig. 232).

Type material. Holotype ♂, *Leptocorisa geniculata* China, PHILIPPINE ISLANDS: (J. J. P. Mounsey), B.M.(N.H.); paratypes, 5 ♂, 3 ♀ of *L. geniculata* China, data as holotype, B.N.(M.H.).



FIGS. 352-353. *Leptocorisa tagalica*. ♀. 352, ovipositor, ventral view; 353, same, dorsal view.

Other material. SARAWAK : 1 ♂, 1 ♀ ; HALMAHERA ISLAND : 1 ♀ ; PHILIPPINE ISLANDS : 13 ♀, 10 ♀.

The range of this species extends in the north into Philippine Islands and in the south into Indonesia (Halmahera Islands). This species has also been found on paddy in Sarawak. The adults have been collected from March to November.

This species is very close to *L. luzonensis* sp. n. and shares the characters of the black colour of the apices of femora and bases of tibiae and the two brownish black spots behind ocelli ; but can easily be separated from this species by pale ochraceous colour of the body, dusty grey colour of the venter of abdomen and short apical antennal segments. The long and cylindrical blades of claspers and other aedeagal appendages are of value in confirming identification.

Leptocorisa geniculata China, 1924 is a primary homonym of *Leptocorisa geniculata* Guérin, 1857. In spite of the fact that Guérin's species had been transferred to *Lyrnessus* by Stål (1866) before China described his species, China's species must be renamed. Dr. W. E. China has kindly suggested that *tagalica* would be an appropriate name, representing its Philippine origin.

Leptocorisa bipunctata Costa

Leptocorisa bipunctata Costa, 1863 : 260 ; Stål, 1873 : 87

Original description : " Luteo—testacea, antennis brunneis, articulis 12 et 22 basi dilutioribus quarto basi pallido ; capitis linea utrinque laterali, pronoti punctis duobus humera-libus, clytrorum que cario margine laterali expecti fusco nigris, femoribus apice, tibiis tarsisque fuscis ♂ long. mill 14, lat. mill 2 1/3 long, antenn. mill. 17. Patria ? "

Every effort was made to find the type of this species but without success. Approaches to the University Museum, Naples were unsuccessful. None of the specimens examined had been labelled as *Leptocorisa bipunctata* Costa by earlier workers. The original description is so vague that it might apply to almost any member of the subfamily and without any knowledge of the type locality, its identity cannot be guessed.

Leptocorisa burmeisteri Montrousier

Leptocorisa burmeisteri Montrousier, 1865 : 277 ; Stål, 1873 : 87

Original description (translated from French) : " (length including antennae, 0.030 m.). Animal dark green above and yellowish below. Legs green, antennae brown. The upper surface of the head is light yellow, beneath it is yellowish green with the anterior portion apple green. The antennae which are as long as the body are brown with the extremity of the first segment dark green and the base of the fourth light green. The eyes are black, ocelli red. The rostrum, which is green, does not extend past the insertion of the middle legs. The prothorax is shagreened with gibbosity at its posterior angles, green marks on the rest of the border, green shades being paler at the sides, yellow below with a black spot at each side under the anterior angles. Scutellum finely punctate and almost metallic green. The elytra have the coriaceous part punctate, pink at the base and brown at the corners and bright green at the margins, especially the exterior, the membranous part obscurely smoky. Sternum is yellow and pale green in front of the insertion of the front legs. The abdomen is yellow, a little reddish on the sides with the tip green. Femora are green, the hairy tibiae are brownish and so are the tarsi. It is found at Kanala in the fields, on grasses and in vegetation."

The type of this species could not be examined. According to Horn (1926-28), the Montrousier collection is supposed to be present in Montpellier Museum (Herauld) France. M. Jean Claparede, the curator of this museum, wrote saying that there was no insect collection there and he would convey my request to the University of Montpellier, but no further information has been received.

However two specimens labelled "*Leptocorisa burmeisteri* Montrousier" from New Caledonia and New Hebrides in the collection of the Paris Museum were examined. These represented *Leptocorisa acuta* (Thunberg). As the title of Montrousier's paper shows, Kanala is in New Caledonia, from where a number of specimens have been identified as *Leptocorisa acuta*. In the light of original description and type locality it becomes certain that this species is a synonym of *L. acuta* (Thunberg).

MUTUSCA Stål

Mutusca Stål, 1866 : 160, 1873 : 86

Type-species : *Leptocorisa prolixa* Stål by monotypy.

Body linear. Head elongated. Antennae with basal segments swollen throughout their length, in side view wider beyond middle. Rostrum short, nearly reaching second coxae. Pronotum at least twice as long as broad.

In ♂, posterior margin of seventh abdominal tergum produced into a medium rounded process (Text-fig. 355) ; pygophore rounded, claspers curved at apices, curved portion triangular (Text-fig. 357) ; aedeagus with both (dorsal and ventral) pairs of thecal appendages, with a pair of lateral conjunctival appendages, a dorsal membranous with a terminal appendage (Text-fig. 356) and a pair of dorso-lateral conjunctival appendages. Frontal or dorsal conjunctival appendages wanting.

In ♀, posterior margin of seventh abdominal sternum emarginate, with a short median split and a fold (Text-fig. 368) ; intervalvular sacs absent ; spermatheca rounded, with a small twisted tube but without a median flange (Text-fig. 370).

This genus can easily be separated from other genera of the tribe by the basal antennal segments, which are swollen throughout their length.

KEY TO SPECIES

1 Basal antennal segment long, at least a third as long again as third segment ; second at least slightly longer than third ; paraclypeae thin and straight (Text-fig. 3) ; usually a faint black median longitudinal line present on abdominal venter. (In ♂, pygophore with a concave median posterior margin (Text-fig. 364) ; aedeagus with second left lateral conjunctival appendage represented by scattered spines and first lateral appendage asymmetrical (Text-fig. 366). In ♀, ninth paratergite narrow and elongated, at least three times as long as broad (Text-fig. 368))

prolixa (p. 113)

- Basal antennal segment comparatively short, only slightly longer than third ; second at least slightly shorter than third ; paraclypeae thick, medially curved and converging at apices (Text-fig. 354) ; faint black line on abdominal venter usually absent. (In ♂, pygophore with a pointed apex (Text-fig. 355) ; aedeagus with second left lateral conjunctival appendages represented by a bunch of spines, all fused together and first lateral appendage symmetrical (Text-fig. 356) ; in ♀, ninth paratergite broad and comparatively short, about twice as long as broad))

brevicornis (p. 111)

Mutusca brevicornis (Dallas)

(Text-figs. 354-363)

Leptocorisa brevicornis Dallas, 1852 : 483*Mutusca brevicornis* (Dallas) Stål, 1866 : 160, 1873 : 86

Characterized by curved, thick and converging paraclypeae, by short basal antennal segment, which is only slightly longer than third and by the form of ♂ and ♀ genitalia.

♂. Body length, 14.7-15.2 mm., width, 1.5-1.6 mm. Head length, 2.0-2.1 mm., width, 1.3-1.33 mm. Antennae, segment I, 2.8-3.1 mm., II, 2.3-2.4 mm., III, 2.4-2.45 mm., IV, 2.3-2.4 mm. Rostrum, segment I, 1.3-1.35 mm., II, 1.3-1.35 mm., III, 0.4-0.5 mm., IV, 0.7 mm. Pronotum, length, 2.4-2.5 mm., width, 1.3-1.5 mm. Hind femora, 4.7-4.8 mm. Hind tibia, 4.8-5.2 mm. Distance between ocelli, 0.4-0.5 mm., distance between an ocellus and an eye, 0.6-0.7 mm.

Body linear, comparatively more robust, usually pale unicolourous. Head with paraclypeae thick and medially curved, converging at apices (Text-fig. 354). Antennae with short basal segments, at most a quarter as long again as third segment, second always shorter than third. Rostrum comparatively short, nearly approaching anterior margins of second coxae. Pronotal disc with posterior angles brownish black. Legs pale, with basal half of femora usually tinged with green. Hemelytra at base of membrane brownish. Abdomen with dorsum, excluding connexiva, brownish black with three black lines; venter pale, usually with two lateral black lines, median longitudinal black line usually absent. Posterior margin of seventh abdominal tergum with a median round projection, less punctate and with transverse lines; pygophore rounded with pointed apex (Text-fig. 355).

♂ GENITALIA : Claspers comparatively with a long neck and a small median process (Text-fig. 357); both dorsal and ventral pairs of thecal appendages present; second left as a bunch of spines, all fused together, first symmetrical; membranous appendage with a smaller terminal appendage (Text-fig. 356), and a pair of dorso-lateral membranous appendages.

♀. Body length, 15.0-16.5 mm., width, 1.5-1.7 mm. Head length, 2.1-2.2 mm., (only paraclypeae 0.8 mm.), width, 1.3-1.5 mm. Antennae, segment I, 3.0-3.2 mm., II, 2.4-2.5 mm., III, 2.43-2.6 mm., IV, 2.5-2.6 mm. Rostrum, segment I, 1.33 mm., II, 1.33 mm., III, 0.5 mm., IV, 0.7 mm. Pronotum, length, 2.6-2.7 mm., width, 1.5-1.7 mm. Hind femora, 4.7-4.8 mm. Hind tibia, 4.9-5.2 mm. Distance between ocelli, 0.4-0.5 mm., distance between an ocellus and an eye, 0.6-0.7 mm.

Longer than ♂, otherwise similar, posterior margin of seventh abdominal sternum emarginate, with a long median split and a median fold; ninth paratergites comparatively broad, about twice as long as broad (Text-fig. 360).

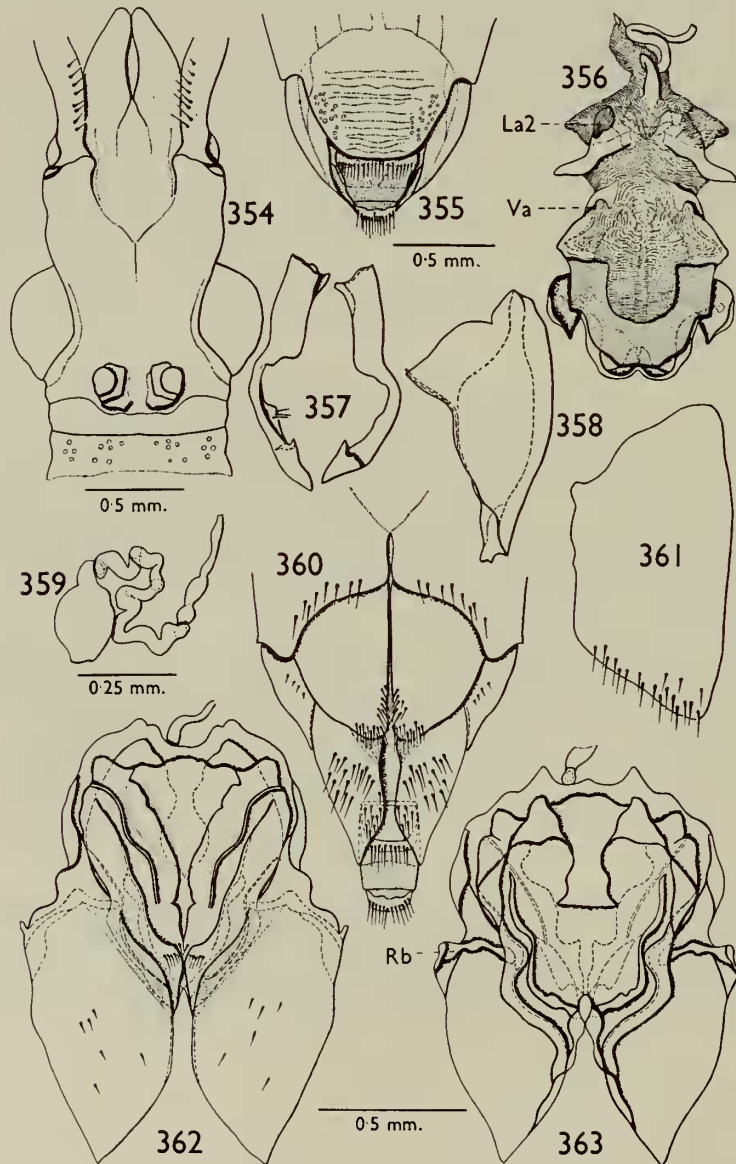
♀ GENITALIA : First gonocoxae comparatively broad, breadth less than half of length, apices rounded (Text-fig. 360); intervalvular sacs absent; spermatheca oval, with a short twisted tube.

Type material. Lectotype ♂, AUSTRALIA : "New Holland" (*J. Byrne*), B.M. (N.H.); paratype, 1 ♀, AUSTRALIA : "New Holland", Swan River (*Richardson*), B.M.(N.H.).

Other material. AUSTRALIA : 83 ♂, 53 ♀; SOLOMON IS. : 1 ♂.

The range of this species extends from the type localities in Western Australia to Melville Islands in the north, to New South Wales and Tasmania in the south and

Solomon Islands in the east. The adults have been found on *Daviesia*, an Australian leguminous plant and they have also been collected at light. Adults have been taken at most times of the year, but they seem to be in abundance during the summer months of November to February. No specimen has been collected in July or August.



FIGS. 354-363. *Mutusca brevicornis*, 354-357, ♂, 358-363, ♀. 354, head, dorsal view; 355, terminalia, dorsal view; 356, aedeagus (inflated), ventral view; 357, claspers, inner and outer views; 358, first gonopophysis, ventral view; 359, spermatheca; 360, terminalia, ventral view; 361, first gonocoxa, ventral view; 362, ovipositor, ventral view; 363, same, dorsal view.

This species can easily be separated from *M. proluxa* (Stål) by examining the median posterior margin of pygophore in ♂, which is pointed in this species and concave in *proluxa*. In ♀, the ninth paratergite is comparatively short and broad, breadth about half of the length in this species, whereas in *proluxa* it is elongate and breadth is one-third of length.

Of the three specimens recorded by Dallas only two remain in the British Museum Collection. One is a ♂ (Brit. Mus. 1844-4) collected by Surgeon J. Byrne, R.N. during the voyage of H.M.S. Beagle in North West Australian waters and presented to the British Museum by Haslar Naval Hospital in 1844. The other is a ♀ collected on the Swan River, North West Australia and presented by Sir John Richardson to the British Museum in 1843 (Brit. Mus. 1843-14). Both are labelled New Holland.

The ♂ syntype is here selected as lectotype of this species and has been given a blue museum lectotype label and labelled lectotype of *Leptocorisa brevicornis* Dallas.

Mutusca proluxa (Stål)

(Text-figs. 364-372)

Leptocorisa proluxa Stål, 1859 : 235

Mutusca proluxa (Stål) Stål, 1873 : 86

Characterized by thin and straight paraclypeae, by long basal antennal segments, which are about a third longer than third segment and by the form of ♂ and ♀ genitalia.

♂. Body length, 14.5-16.0 mm., width, 1.4-1.6 mm. Head length, 1.9-2.2 mm., (only paraclypeae 0.8-0.9 mm.), width, 1.2-1.3 mm. Antennae, segment I, 3.4-3.7 mm., II, 2.4-2.8 mm., III, 2.3-2.7 mm., IV, 2.5-2.7 mm. Rostrum, segment I, 1.1-1.2 mm., II, 1.1-1.2 mm., III, 0.5-0.6 mm., IV, 0.7-0.8 mm. Pronotum, length, 2.3-2.6 mm., width, 1.4-1.6 mm. Hind femora, 4.7-5.2 mm. Hind tibia, 5.2-5.3 mm. Distance between ocelli, 0.4-0.43 mm., distance between an ocellus and an eye, 0.55-0.66 mm.

Body linear, usually pale, tinged light brown. Head with paraclypeae uniformly thin, straight and diverging at apices (Text-fig. 3). Antennae, usually tinged with pink, with long basal segment, at least a third as long again as third segment; second at least slightly longer than third. Rostrum usually reaching anterior margin of second coxae. Pronotal disc usually without brownish black spots on posterior angles. Legs pale, with femora tinged light green. Hemielytra with red subcostal and radial veins. Abdomen, with dorsum brownish black, venter pale with a black median longitudinal line. Posterior margin of seventh abdominal tergum with a median rounded projection, projection densely punctate; pygophore rounded with median posterior margin concave (Text-fig. 364).

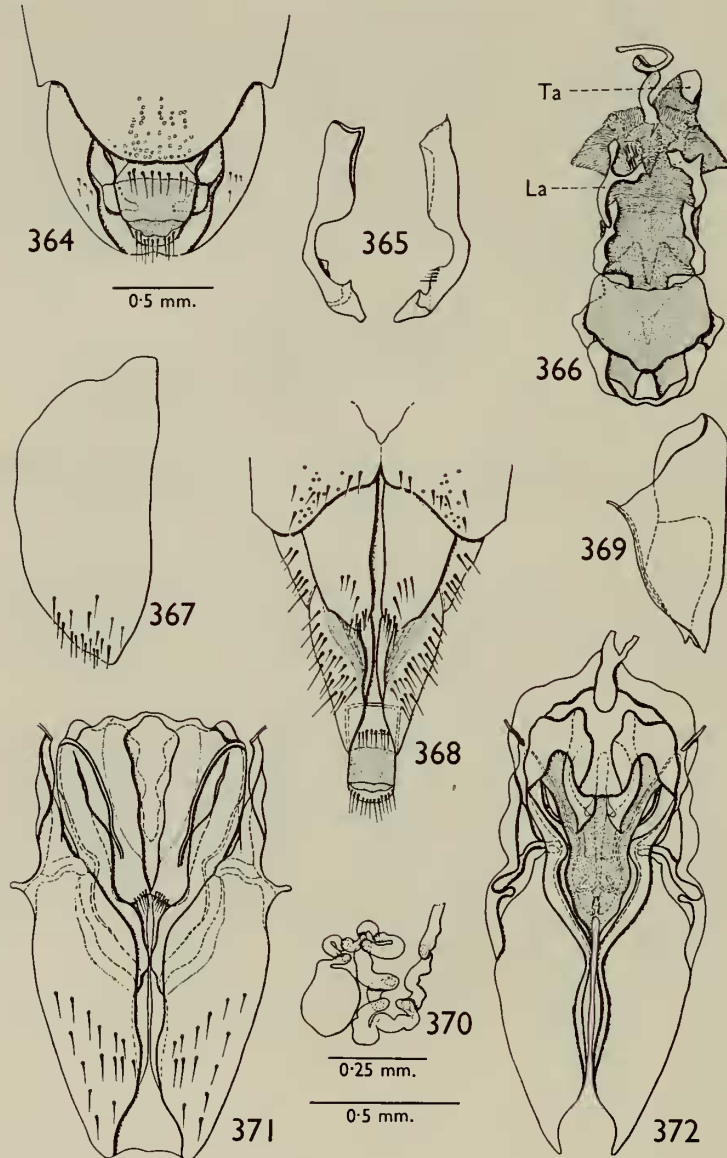
♂ GENITALIA : Claspers comparatively with a short neck and greatly developed median process (Text-fig. 365); both (dorsal and ventral) pairs of thecal appendages present; second left lateral conjunctival appendage, represented by scattered spines, first lateral asymmetrical; membranous appendage with a large terminal appendage (Text-fig. 366) and a pair of dorso-lateral membranous appendages.

♀. Body length, 17.0-18.1 mm., width, 1.6-1.7 mm. Head length, 2.0-2.2 mm., (only paraclypeae 0.7-0.9 mm.), width, 1.3-1.33 mm. Antennae, segment I, 3.4-4.0 mm., II, 2.4-2.8 mm., III, 2.3-2.7 mm., IV, 2.5-2.7 mm. Rostrum, segment I, 1.2-1.3 mm., II, 1.2-1.4 mm., III, 0.5-0.55 mm., IV, 0.7-0.8 mm. Pronotum, length, 2.5-2.9 mm., width, 1.6-1.7 mm. Hind femora, 4.6-5.6 mm. Hind tibia, 4.9-6.0 mm. Distance between ocelli, 0.4-0.43 mm., distance between an ocellus and an eye, 0.6-0.66 mm.

Very similar to ♂ in general appearance but usually longer, posterior margin of seventh

abdominal sternum emarginate, with a short median split and fold (Text-fig. 368); ninth paratergite elongated, breadth only a third of length.

♀ GENITALIA: First gonocoxae narrow, at least twice as long as broad, with rounded apices (Text-fig. 367); intervalvular sacs absent (Text-fig. 372); spermatheca bladder-shaped, with a long twisted tube.



FIGS. 364-372. *Mutusca prolixa*, 364-366, ♂, 367-372, ♀. 364, terminalia, dorsal view; 365, claspers, inner and outer views; 366, aedeagus (inflated), ventral view; 367, first gonocoxa, ventral view; 368, terminalia, ventral view; 369, first gonopophysis, ventral view; 370, spermatheca; 371, ovipositor, ventral view; 372, same, dorsal view.

Type material. Holotype, CHINA : (*Kinb*), labelled "typus", "*prolixus*", abdomen missing, Riksmus. Stockholm.

Other material. INDIA : 1 ♂ ; JAVA : 1 ♀ ; MALAYA : 1 ♂ ; AUSTRALIA : 4 ♂, 6 ♀ ; NEW CALEDONIA : 1 ♂.

The range of this species is wide, extending in the west into India, in the south into Australia, in the north into China and in the east into New Caledonia. It has been collected on grasses, but not many individuals seem to have been found.

BLOETEOCORIS gen. n.

Type-species : *Leptocorixa* (*Rhabdocoris*) *inflexigena* Blöte 1934.

Body robust. Head elongated ; genae remarkably developed, with pointed and inflexed tips (Text-fig. 8) ; ocelli usually placed very close together ; interocellar distance usually about half the distance between an ocellus and an eye (in both the cases including the diameter of both). Antennae with apices of basal segments slightly thicker. Rostrum long, reaching hind coxae.

In ♂, posterior margin of seventh abdominal tergum produced into a median truncated process (Text-fig. 376) ; pygophore rounded, lobes of ninth segments prominently developed, usually produced into horn-like processes ; median posterior margin pointed ; claspers branched at apices into a rectangular and a conical leaf-like portion (Text-fig. 374, A) ; aedeagus with both (dorsal and ventral) pairs of thecal appendages and two pairs of dorso-lateral conjunctival appendages ; supporting appendages always present but frontal and membranous conjunctival appendages absent (Text-fig. 377).

In ♀, posterior margin of seventh abdominal sternum usually with medially pointed apex, very small portion of first gonocoxae visible externally (Text-fig. 378) ; intervalvular sacs absent ; spermatheca usually flask-shaped, with a long coiled tube but without a median flange.

This genus resembles *Stenocoris* and *Leptocorisa* but can easily be separated from them by the pointed and inflexed genae, developed processes of the lobes of the ninth segments in the ♂ and in the ♀ by very small externally visible first gonocoxae.

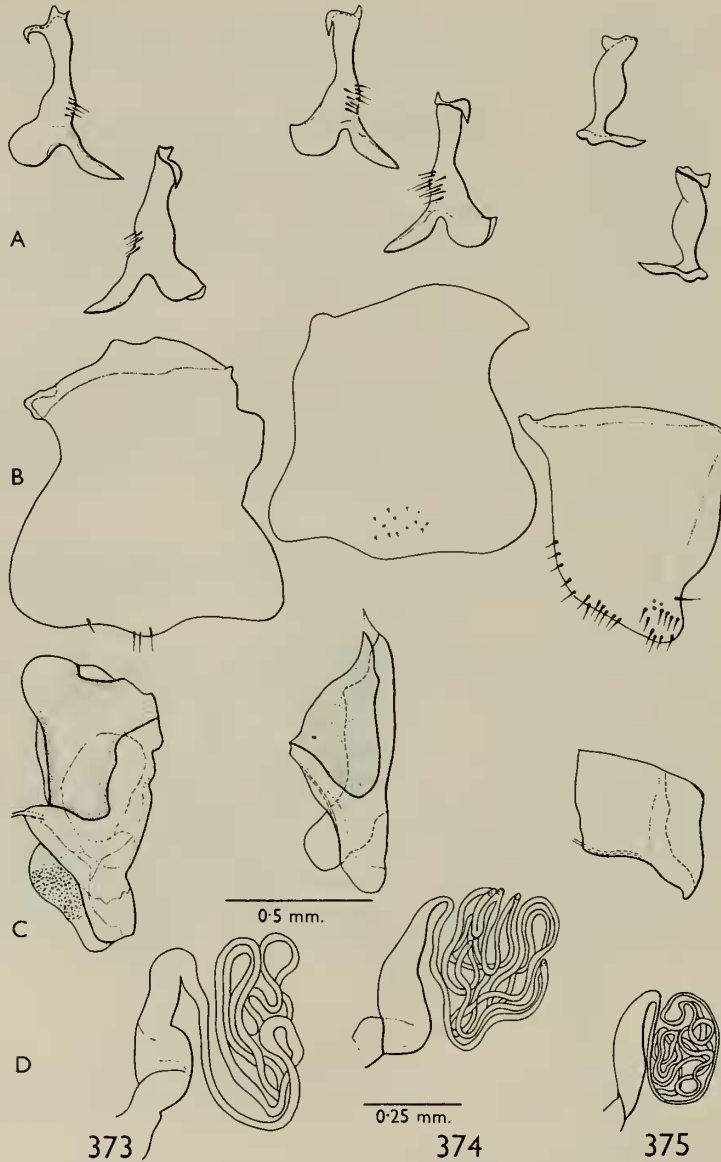
It is named in honour of Dr. H. C. Blöte.

Hsiao (1963) has described a monotypic new genus, *Grypocephalus* for *pallipectus* new species. His generic description is based on the character of remarkably developed juga, which he has shown inflexed and pointed in his diagram of *pallipectus*. It is suspected that he has erred in recognizing the developed structure as "juga" rather than genae. If this is so, my new genus *Bloeteocoris* will fall into synonymy of *Grypocephalus* Hsiao. Until the type specimen of *G. pallipectus* is studied, this cannot be ascertained.

KEY TO SPECIES

- 1 Larger species, body length exceeding 14 mm., head dorsally without a black mark or spot ; in ♂, lobes of ninth segments produced into horn-like processes (Text-fig. 382) ; in ♀, posterior margin of seventh abdominal sternum medially with a small projection, without split (Text-fig. 378) 2
- Smaller species, body length in ♂ 11-11.5 mm., and in ♀, 12-13.2 mm. ; a pair of symmetrical trifurcate marks present on the dorsum of the head ; in ♂, lobes of ninth segments rounded (Text-fig. 386) ; in ♀, posterior margin of seventh abdominal sternum with a median split (Text-fig. 388) *minutus* (p. 121)

- 2 Ocelli larger, interocellar distance always greater than half the distance between an ocellus and an eye ; second antennal segments distinctly longer than third ; in ♂, processes of the lobes of the ninth segments greatly developed, inwardly curved and pointed (Text-fig. 376) ; in ♀, distal margin of first gonocoxae regular (Text-fig. 378 *inflexigena* (p. 117)



FIGS. 373-375. *Bloeteocoris* spp. A, claspers, inner and outer views ; B, first gonocoxae, ventral view ; C, first gonopophysis, ventral view ; D, spermatheca. 373, *inflexigena* ; 374, *meridianus* ; 375, *minutus*.

- Ocelli minute, interocellar distance distinctly less than half the distance between an ocellus and an eye ; second antennal segments subequal to third ; in ♂, the processes of the lobes of ninth segment not greatly developed, straight, and rounded at apices (Text-fig. 381) ; in ♀, distal margin of first gonocoxae irregular (Text-fig. 383) *meridianus* (p. 119)

***Bloeteocoris inflexigena* (Blöte) comb. n.**

(Text-figs. 373, 376-380)

Leptocorixa (*Rhabdocoris*) *inflexigena* Blöte, 1934 : 283

Characterized by acutely pointed and curved processes of the lobes of the ninth segments in the ♂ and in the ♀ by pointed median posterior margin of the seventh abdominal sternum and by the forms of ♂ and ♀ genitalia.

♂. Body length, 16.0 mm., width, 2.4 mm. Head length, 2.2 mm., width, 1.8 mm. Antennae, segment I, 5.3 mm., II, 3.8 mm., III, 3.3 mm., IV, 4.9 mm. Rostrum, segment I, 2.0 mm., II, 2.1 mm., III, 1.1 mm., IV, 1.6 mm. Pronotum, length, 2.8 mm., width, 2.4 mm. Hind femora, 6.4 mm. Hind tibia, 7.6 mm. Distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.86 mm.

Body robust, brown with a greenish tinge. Head large, slightly longer than broad, brownish green ; occipital suture medially concave, arms curving outwards towards sides ; paraclypeae converging at apices, genae with strongly developed tips. Antennae reddish black, with the bases of the apical segments pale. Rostrum long, reaching hind coxae. Disc of pronotum brownish green, behind the collar dorsally convex, a fork-shaped brownish black mark present anteriorly in the middle ; posterior angles with brownish black spots. Legs brownish black, femora tinged with green. The subcostal and radial veins of hemielytra brownish black. Abdomen dorsally pale, tinged with brown, a portion of seventh segment and pygophore black, venter pale unicolourous. Posterior margin of seventh abdominal tergum produced in middle, posterior margin of this projection medially concave ; lobes of ninth segments horn-shaped, inwardly curved and acutely pointed at apices (Text-fig. 376).

♂ GENITALIA : Claspers with leaf-like portions narrow and elongated (Text-fig. 373, A) ; both dorsal and ventral pairs of thecal appendages present, ventral triangular (Text-fig. 377) ; a pair of symmetrical and small lateral appendages (Text-fig. 377) ; vesica, long coiled tube with " T " structures and a pair of supporting appendages (Text-fig. 377).

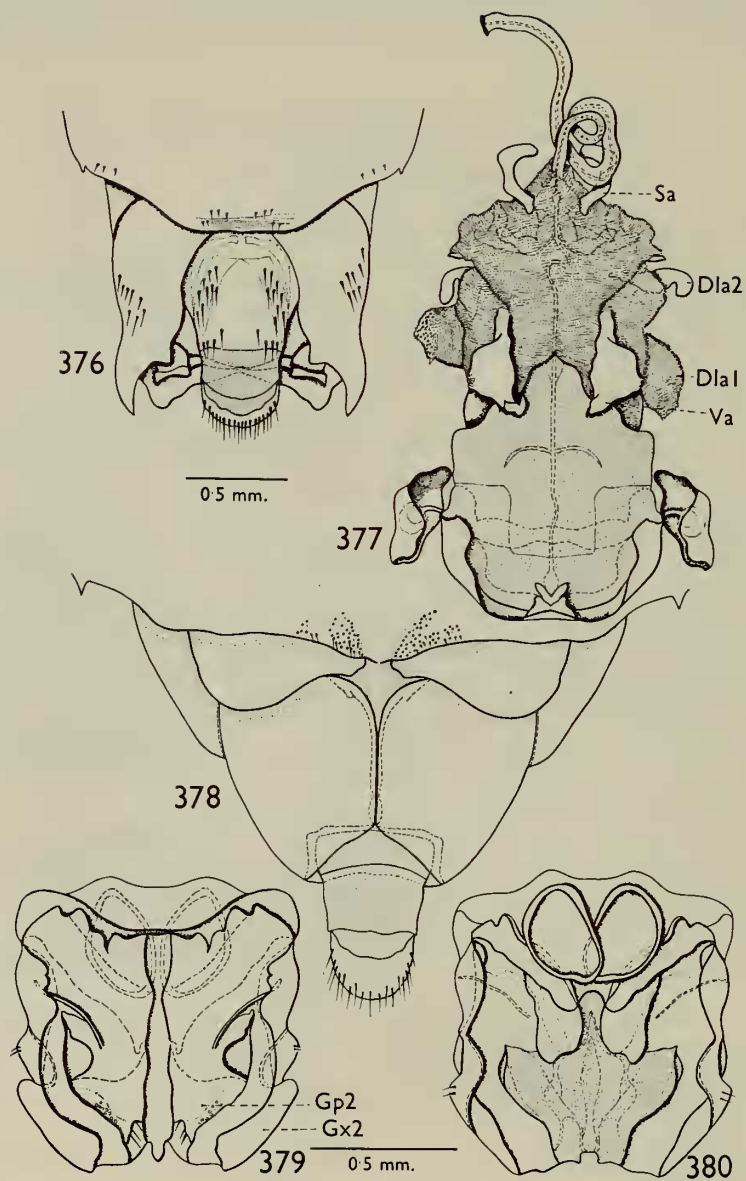
♀. Very similar to ♂ in general appearance, colour and measurements, only slightly larger ; posterior margin of seventh abdominal sternum medially produced with a pointed apex (Text-fig. 378).

♀ GENITALIA : First gonocoxae largely covered externally by seventh abdominal sternum, slightly longer than broad, posterior margin broader than anterior margin, outer margin smooth, convex in middle (Text-fig. 373, B) ; intervalvular sacs absent (Text-fig. 380) ; spermatheca with an uniformly thick and smoothly curve neck (Text-fig. 373, D).

Type material. Holotype ♂, BURMA : Moulmein, 12.v.1929, Mus. Leiden ; allotype ♀, data as holotype, Mus. Leiden.

This species seems to be comparatively rare.

The ♂ can be separated from the closely allied species *meridianus* by curved and pointed processes of the lobes of ninth segments and the ♀ by pointed median posterior margin of seventh abdominal sternum.



FIGS. 376-380. *Bloeteocoris inflexigena*, 376-377, ♂, 378-380, ♀. 376, terminalia, dorsal view; 377, aedeagus (inflated), ventral view; 378, terminalia, ventral view; 379, ovipositor, ventral view; 380, same, dorsal view.

Bloeteocoris meridianus sp. n.

(Text-figs. 374, 381-385)

♂ characterized by the straight processes of the lobes of the ninth segment and ♀ by the small and rounded projection of the seventh abdominal sternum and by the form of genitalia.

♂. Body length, 15.0 mm., width, 2.3 mm. Head length, 2.0 mm., width, 1.7 mm. Antennae, segment I, 5.2 mm., II, 3.5 mm., III, 3.46 mm., IV, 4.3 mm. Rostrum, segment I, 1.9 mm., II, 1.9 mm., III, 1.0 mm., IV, 1.45 mm. Pronotum, length, 2.9 mm., width, 2.3 mm. Hind femora, 6.0 mm. Hind tibia, 7.6 mm. Distance between ocelli, 0.4 mm., distance between an ocellus and an eye 0.9 mm.

Body robust, pale with a brownish tinge. Head large, slightly longer than broad; occipital suture medially concave, slightly "V"-shaped behind ocelli, arms curving outwards towards sides, paraclypeae diverging at apices; genae with inflexed tips. Antennae reddish brown, with second and third segments tinged black and the bases of the apical segments pale. Rostrum long, reaching hind coxae. Pronotal disc palish brown, not remarkably convex behind collar, fork-shaped, brownish black mark absent; posterior angles with brownish black spots. Legs palish brown, with tibiae and tarsi darker. Subcostal and radial veins of hemielytra brownish black. Abdomen with dorsum pale, tinged with brown; venter pale unicolourous; a portion of seventh segment and pygophore black. Posterior margin of seventh abdominal tergum medially produced, projection with a truncated margin; pygophore with lobes of the ninth segments produced into straight processes, rounded at apices (Text-fig. 381).

♂ GENITALIA: Claspers with leaf-like portion broad and short (Text-fig. 374, A); both (dorsal and ventral) pairs of thecal appendages present, ventral elongated (Text-fig. 382); a pair of symmetrical lateral larger conjunctival appendages (Text-fig. 382); two pairs of dorso-lateral conjunctival appendages as in Text-fig. 382; vesica thin, long coiled tube with "T" structures and a pair of supporting appendages (Text-fig. 382).

♀. Body length, 16.5 mm., width, 2.5-2.6 mm. Head, length, 2.1-2.2 mm., width, 1.8 mm. Antennae, segment I, 5.1 mm., II, 3.5 mm., III, missing, IV, missing. Rostrum, segment I, 2.0 mm., II, 2.0 mm., III, 1.0 mm., IV, 1.5 mm. Pronotum, length, 3.0-3.1 mm., width, 2.5-2.6 mm. Hind femora, 6.4 mm. Hind tibia, 7.7 mm. Distance between ocelli, 0.4 mm., distance between an ocellus and an eye, 0.9 mm.

Slightly larger than ♂, otherwise very similar; posterior margin of seventh abdominal sternum with a rounded median projection (Text-fig. 383).

♀ GENITALIA: First gonocoxae externally almost entirely covered by seventh sternum, about as long as broad, posterior margin broader than anterior margin, outer margin sinuate (Text-fig. 374, B); intervalvular sacs absent (Text-fig. 384); spermatheca with a thin tapering neck (Text-fig. 374, D).

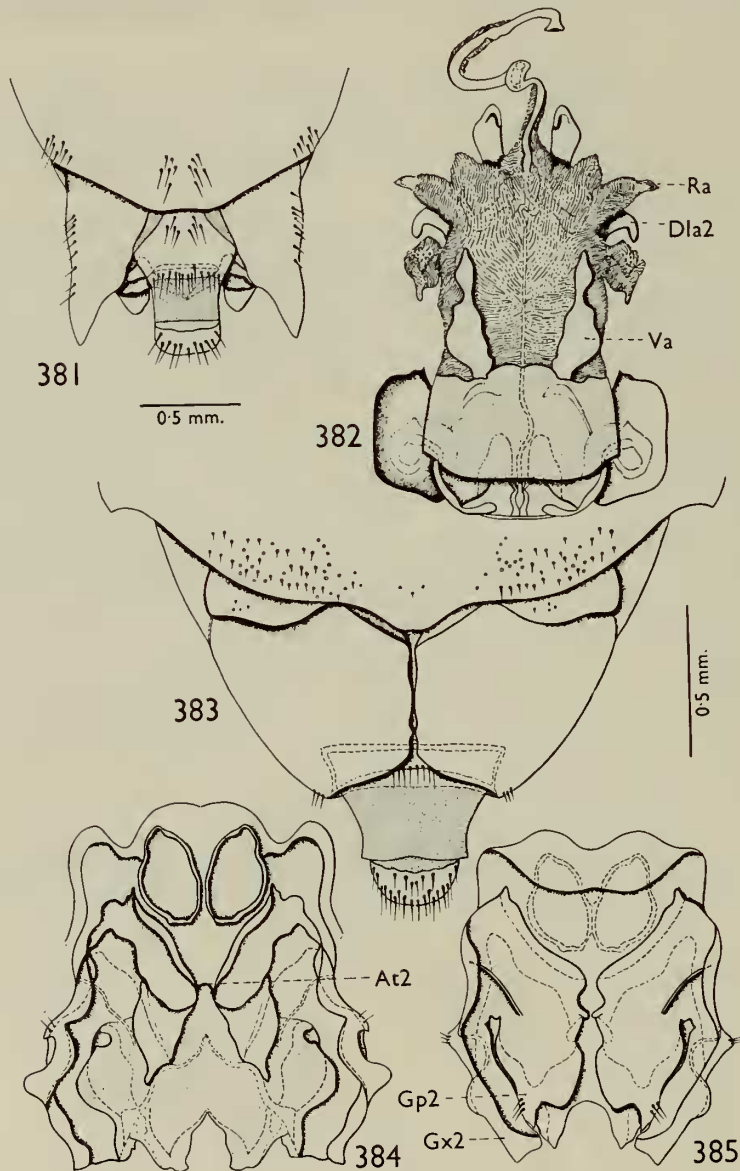
Holotype ♂, THAILAND: Trang. Banchong "at light", 26.iv.1924 (*I. H. Evans*), "Ex F. M. S. Museum", B.M.(N.H.).

Paratypes. MALAYA: Perak, Gunong Kledang, 2 ♂ xi.1916, "Ex F. M. S. Museum", B.M.(N.H.).

This species has most southernly range in the genus *Bloeteocoris*. All three *Bloeteocoris* species would appear to be allopatric. *B. minutus* in south China, north India and north east Burma, *B. inflexigena* in south Burma and *B. meridianus* in Thailand and Malaya.

This species is very close to *inflexigena*, but can easily be separated by smaller

interocellar distance (less than half of the distance between an ocellus and an eye), and by the straight processes of the lobes of the ninth segment.



FIGS. 381-385. *Bloeteocoris meridianus*, 381-382, ♂, 383-385, ♀. 381, terminalia, dorsal view; 382, aedeagus (inflated), ventral view; 383, terminalia, ventral view; 384, ovipositor, dorsal view; 385, same, ventral view.

Bloeteocoris minutus sp. n.

(Text-figs. 375, 386-390)

Characterized by small size of the body, by a pair of trifurcate dorsal black marks on the middle of head and by the form of ♂ and ♀ genitalia.

♂. Body length, 11.0-11.5 mm., width, 1.7-1.9 mm. Head, length, 1.5-1.6 mm., width, 1.3-1.4 mm. Antennae, segment I, 2.6-2.7 mm., II, 1.9-2.1 mm., III, 1.9-2.1 mm., IV, 2.4-2.8 mm. Rostrum, segment I, 1.4-1.6 mm., II, 1.4-1.6 mm., III, 0.7-0.9 mm., IV, 1.0-1.2 mm. Pronotum, length, 1.9-2.1 mm., width, 1.7-1.9 mm. Hind femora, 3.5-3.7 mm. Hind tibia, 4.3-4.6 mm. Distance between ocelli, 0.3-0.4 mm., distance between an ocellus and an eye, 0.6-0.7 mm.

Body short, pale, tinged black. Head large, slightly longer than broad, with a pair of symmetrical trifurcate dorsal black marks between compound eyes; postoccipital region black; occipital suture concave in middle, arms curving outwards towards sides; paraclypeae converging at apices; genae with inflexed tips. Antennae brownish black, unicolourous. Rostrum very long, extending beyond the apices of third coxae. Pronotal disc with brownish black punctures, margins and an oval portion in middle pale; posterior angles with brownish black spots. Legs pale unicolourous, tarsi slightly darker. *R-M* vein of the hemielytra brownish black. Abdomen with dorsum pale, tinged with red, venter palish brown. Posterior margin of seventh abdominal tergum with a median rounded projection; pygophore with lobes of ninth segments rounded (Text-fig. 386).

♂ GENITALIA: Apices of claspers slightly concave in middle with small leaf-like portion (Text-fig. 375, A); both dorsal and ventral pairs of thecal appendages present, ventral pair triangular (Text-fig. 387); a pair of symmetrical lateral conjunctival and two asymmetrical pairs of dorso-lateral appendages present (Text-fig. 388); vesica thin and coiled tube with "T" structures and a pair of supporting appendages.

♀. Body length, 12.0-13.2 mm., width, 2.0-2.2 mm. Head length, 1.7-1.9 mm., width, 1.4-1.5 mm. Antennae, segment I, 2.9-3.2 mm., II, 2.3-2.4 mm., III, 2.2-2.3 mm., IV, 2.6-2.8 mm. Rostrum, segment I, 1.7-1.8 mm., II, 1.7-1.9 mm., III, 0.7-1.0 mm., IV, 1.2-1.3 mm. Pronotum, length, 2.2-2.7 mm., width, 2.0-2.2 mm. Hind femora, 4.3-4.7 mm. Hind tibia, 4.8-5.6 mm. Distance between ocelli, 0.4 mm., distance between an ocellus and an eye, 0.7-0.8 mm.

Very similar to ♂ in general appearance but distinctly larger; posterior margin of seventh abdominal sternum with a short median split and a conspicuous median fold (Text-fig. 388).

♀ GENITALIA: First gonocoxae largely covered by seventh abdominal sternum, triangular with rounded apices (Text-fig. 375, B); intervalvular sacs absent (Text-fig. 390); spermatheca kidney-shaped (Text-fig. 375, D).

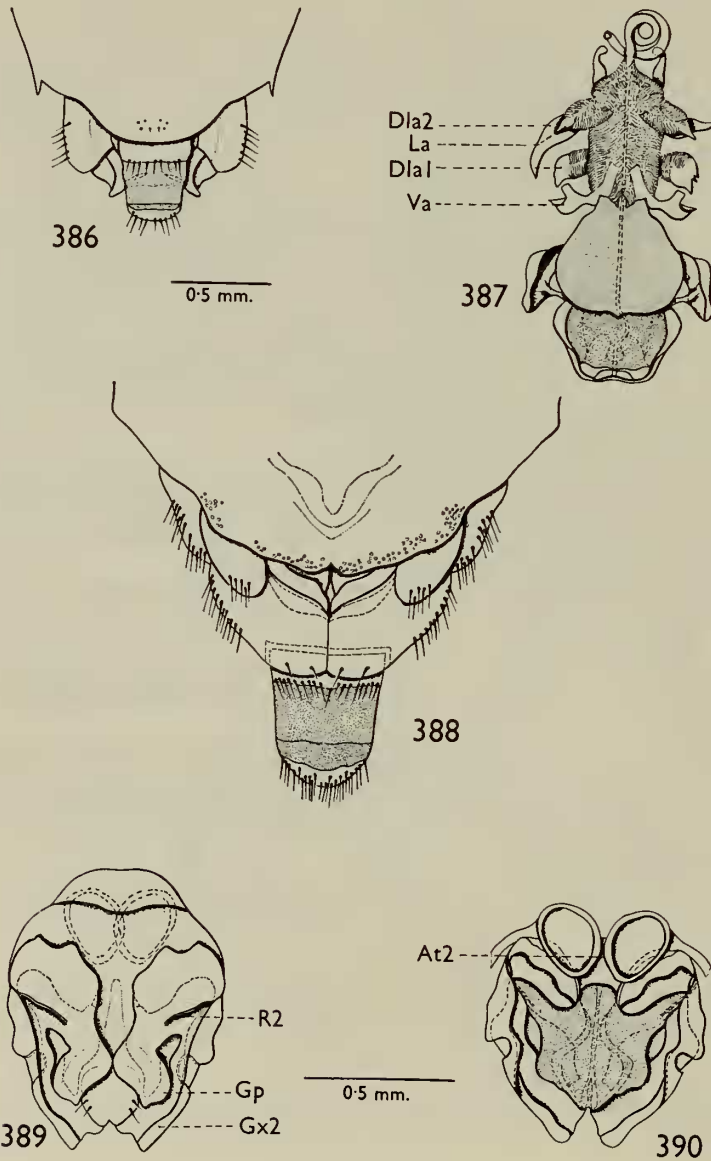
Holotype ♂, N.E. BURMA: Kambaiti, 7,000 ft., 12.iv.1934 (*R. Malaise*), labelled "*Leptocoris costalis* H. S., det. Kiritshenko", Riksmus. Stockholm.

Paratypes. 4 ♂, 4 ♀, locality as holotype, iv-v.1934, Riksmus. Stockholm; CHINA: Kunming, Yunnan, 1 ♂ 24.vii.1945 (*Cazier*), A.M.N.H.; INDIA: Darjiling, 1 ♂, Mus. Hist. nat. Paris, 2 ♂, 1 ♀, B.M.(N.H.).

The range of this species extends from N.E. India in the west into southern China (Kunming, Yunnan) and N.E. Burma. Specimens have been collected in April, May and July.

This is an isolated species in the genus and can easily be separated by its small size and characters of genitalia (see above).

The diagram of the lateral side of the head of *G. pallipectus* Hsiao (1963) resembles *B. minutus* and if he has erred in diagnosing *juga* for *genae*, *B. minutus* will fall as a synonym of *G. pallipectus*. I have written to Dr. Hsiao for the loan of his type material but so far have had no reply.



FIGS. 386-390. *Bloeteocoris minutus*, 386-387, ♂, 388-390, ♀. 386, terminalia, dorsal view; 387, aedeagus (inflated), ventral view; 388, terminalia, ventral view; 389, ovipositor, ventral view; 390, same, dorsal view.

NOLIPHINI trib. n.

Body large and robust. Head broader than long, paraclypeae poorly developed, distinctly shorter than and never enclosing clypeus; head behind the eyes very strongly narrowed and turned up towards pronotum. Pronotum broader than long, trapeziform and convex. Aedeagus with both dorsal and ventral pairs of thecal appendages, simple. Spermatheca usually tubular, sometimes triangular, never with a median flange.

The characters of the anterior region of the head and the form of the pronotum clearly separate this tribe from Leptocorisini.

LYRNESSUS Stål

Lyrnessus Stål, 1862 : 59, 1865 : 185, 1866 : 159, 1868 : 54, 1873 : 86
Coristenia Costa, 1863 : 261

Type-species : *Lyrnessus geniculatus* (Guerin, 1857) by monotypy.

Body robust. Head triangular. Antennae with apices of basal segments slightly thicker. Rostrum long, reaching third coxae. Pronotal disc trapeziform, without latero-posterior spines (Text-fig. 7) and without black sculpturation. Hemielytra brownish black with costal margins and veins prominently pale.

In ♂, posterior margin of seventh abdominal tergum truncated, medially only slightly concave (Text-fig. 392); claspers strongly curved, apically acutely pointed, with a median spine (Text-fig. 393); aedeagus with both (dorsal and ventral) pairs of thecal appendages, asymmetrical pair of lateral conjunctival appendages and a pair of fused supporting appendages (Text-fig. 393).

In ♀, posterior margin of seventh abdominal sternum emarginate, with a median fold (Text-fig. 394); first gonocoxae large with round apices (Text-fig. 399); three pairs of intervalvular sacs, spermatheca tubular, curved in middle, with a long coiled tube.

The only species of this genus, *L. geniculatus* (Guérin), is found in Neotropical region, whereas all the other species of the tribe Noliphini are confined to Oriento-Australian region, thus it is not surprising that it shows isolation in many characters. It lacks the fore femoral spines of *Cosmoleptus* and latero-posterior spines on pronotum of *Noliphus*. It also resembles *Stenocoris* (*Pseudoleptocorisa*) *erratica* Blöte in the characters of the colour of the hemielytra.

***Lyrnessus geniculatus* (Guérin)**

(Text-figs. 391-399)

Leptocorisa geniculata Guérin, 1857 : 392

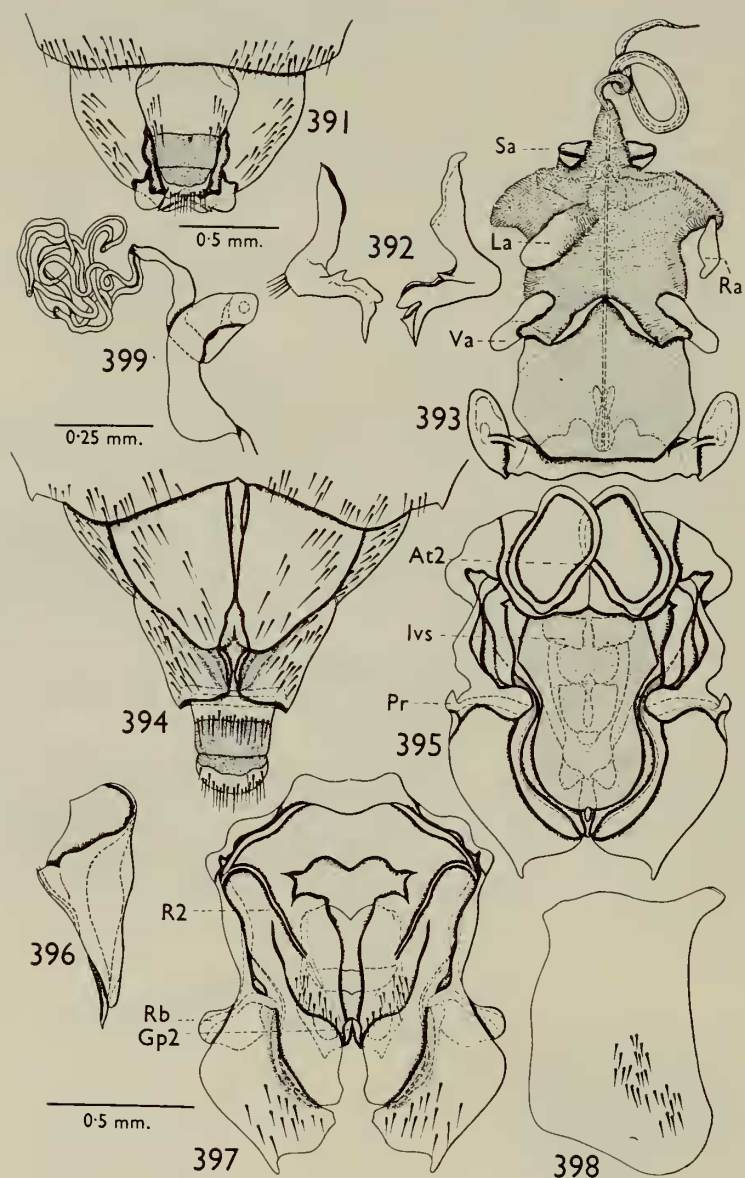
Lyrnessus geniculatus (Guérin) Stål, 1866 : 159

Paryphes tibialis Stål, 1860 : 31

Coristenia flavicosta, Costa, 1863 : 261

Characterized by pale basal quarter of apical antennal segments, by dark brownish black apices of femora, entire tibia and tarsi and by the form of ♂ and ♀ genitalia.

♂. Body length, 12.6-14.6 mm., width, 2.2-2.7 mm. Head length, 1.3-1.4 mm., width, 1.4-1.7 mm. Antennae, segment I, 3.0-3.7 mm., II, 2.1-2.8 mm., III, 2.4-3.0 mm., IV, 3.9-4.1 mm. Rostrum, segment I, 1.4-1.6 mm., II, 1.4-1.7 mm., III, 0.6-0.7 mm., IV, 0.9-1.1 mm. Pronotum, length, 2.1-2.6 mm., width, 2.2-2.7 mm. Hind femora, 4.2-5.5 mm.



FIGS. 391-399. *Lyrnessus geniculatus*, 391-392, ♂, 394-399, ♀. 391, terminalia, dorsal view; 392, claspers, inner and outer views; 393, aedeagus (inflated), ventral view; 394, terminalia, ventral view; 395, ovipositor, dorsal view; 396, first gonopophysis, ventral view; 397, ovipositor, ventral view; 398, first gonocoxa, ventral view; 399, spermatheca.

Hind tibiae, 4.9-6.6 mm., interocellar distance, 0.4-0.5 mm., distance between an ocellus and an eye, 0.7-0.9 mm.

Body robust. Head pale, with a black spot behind ocelli and one on clypeus at labral base; distinctly broader than long; ocelli large, interocellar distance slightly more than half the distance between an ocellus and an eye. Antennae brownish black, with bases of second, third and at least a quarter basal portions of apical segments pale. Rostrum long, reaching hind coxae with third segment shortest. Lateral black line extending from sides of antenniferous tubercle on to anterior one-fourth of propleuron. Pronotal disc posteriorly tinged green, sometimes pale unicoloured, with backward triangular processes on either side, brownish black spots on posterior angles present (Text-fig. 7). Legs with femora pale, tinged with green, apices of femora, entire tibiae and tarsi brownish black. Hemelytra brownish black with pale veins. Abdomen with dorsum yellowish brown, venter pale, unicoloured. Posterior margin of seventh abdominal tergum truncated (Text-fig. 391), medially slightly concave; pygophore round, with narrow emarginated posterior margin.

♂ GENITALIA: Claspers strongly curved in middle, apically acutely pointed, with a smaller spine near apices and a larger in middle (Text-fig. 392); aedeagus with both (dorsal and ventral) pairs of thecal appendages as in Text-fig. 393; lateral appendages asymmetrical (Text-fig. 393); vesica with a pair of fused supporting appendages.

♀. Very similar to ♂ in general appearance and measurements; posterior margin of seventh abdominal sternum emarginate, with a median fold (Text-fig. 394).

♀ GENITALIA: First gonocoxae large, round at apices with regular external margin (Text-fig. 398); three pairs of intervalvular sacs (Text-fig. 395); spermatheca tubular (Text-fig. 399).

Type material. Holotype ♀ of *Paryphus tibialis* Stål, BRAZIL: (F. Schlb), Riksmuseum. Stockholm; MEXICO: Oaxaca, 1 ♂ (Sallé), with a label "*Leptocorisa geniculata* Guérin (M. M. Type)", Riksmuseum. Stockholm.

Other material. CUBA: 2 ♂, 2 ♀; BRAZIL: 3 ♂, 7 ♀; PERU: 3 ♂, 1 ♀; PANAMA: 1 ♂, 1 ♀; PARAGUAY: 1 ♀.

The range of this species extends in the north into Mexico and in the south into Paraguay. The adults have been collected in March, September, October and November.

In spite of enquiries at various Italian museums, it has not been possible to trace the type of *Leptocorisa geniculata* Guérin or *Coristenia flavicosta* Costa. It is possible that the specimens from the Riksmuseum, Stockholm with labels "Typ" and "*Leptocorisa geniculata* Guerin" could have been the type. However, although Guérin's original description was based entirely on colour characters, this and the figure make it obvious that the present concept of the species (which is also Stål's) is correct. This view is strengthened by the identification of a few specimens from the type locality (Cuba) as this species. In 1868 Stål synonymized *Coristenia* Costa, 1863 with *Lyrnessus* Stål, 1860. Costa in his original description states "Luteo testacea, punctata, antennis nigris articulis 2 et 3 summa basi, 4 annulo latiore prope basi un albidis. Capitis vitta utrinque laterali, maculaque pone ocellos nigris; pronote disc postico virescente, punctis, humeralibus nigris, elytrorum corio fusco virescenti venis discoidalibus fulvis, vena juxta marginata conspicua flava; tibiis tarsisque fuscis, illis annulo minuto basi pallido, long. mill. 13; lat. mill. 2¼. Patria?". This description agrees in all details with that of *L. geniculata* and as neither the type specimen nor the type locality is known, it is proposed to accept Stål's synonymy.

COSMOLEPTUS Stål

Cosmoleptus Stål, 1873 : 86-87

Type-species : *Lyrnessus limbaticollis* Stål by monotypy.

Body usually robust. Head triangular. Antennae with apices of basal segments slightly thicker. Rostrum long, approaching hind coxae. Pronotal disc trapeziform with black sculpturation, lateral and anterior margins pale, impunctate (Text-fig. 4). Posterior angles without spines. Legs with fore femora armed with ventro-posterior spines (Text-fig. 9). Hemelytra, cuneus with a white spot.

In ♂, posterior margin of seventh abdominal tergum truncated, medially slightly concave (Text-fig. 403) ; pygophore rounded ; claspers with pointed apices (Text-fig. 405) ; aedeagus with dorsal and ventral pairs of thecal appendages, a pair of fused supporting appendages and membranous appendage with usually a terminal appendage (Text-fig. 406) ; frontal conjunctival and dorsal appendages wanting.

In ♀, posterior margin of seventh abdominal sternum emarginate, with a median fold (Text-fig. 408) ; first gonocoxae large, usually two pairs of intervalvular sacs present (Text-fig. 411). Spermatheca tubular (Text-fig. 407).

This genus is close to *Noliphus* but can be separated by the absence of spines on posterior angles of pronotum. Its fore femoral spines are unique.

KEY TO SPECIES

- 1 Abdomen ventrally pale, unicoloured, with a series of brownish black spots on either side ; disc of pronotum dark brown with smooth brownish black dots posteriorly on either side ; hemelytra brownish black with prominently pale veins, fore femoral spines pale, only brownish at apices ; hind femora pale unicoloured *sumatranus* (p. 129)
- Abdomen ventrally reddish brown, brownish black spots absent ; disc of pronotum dark brownish black, without distinct brownish black dots ; hemelytra palish brown, unicoloured ; entire fore femoral spines brownish black ; hind femora usually brownish black at apices 2
- 2 Smaller species (13.7-14.0 mm.) ; pronotum short, about two-thirds of basal antennal segments, with anterior quarter pale ; in ♂, posterior margin of seventh abdominal tergum truncate (Text-fig. 400) *bakeri* (p. 126)
- Larger and robust species (16.2-17.2 mm.) ; pronotum long, about three-quarters of basal antennal segments, with entire disc behind collar except sides dark brownish black ; in ♂, posterior margin of seventh abdominal tergum emarginate (Text-fig. 403) *limbaticollis* (p. 128)

***Cosmoleptus bakeri* sp. n.**

(Text-figs. 400-402)

Characterized by small size, short pronotum, about two-thirds of basal antennal segment, with anterior fourth pale and by ♂ genitalia.

♂. Body length, 13.7-14.0 mm., width, 2.7-2.9 mm. Head length, 1.45-1.55 mm., width, 1.7-1.8 mm. Antennae, segment I, 3.6-3.9 mm., II, 2.9-3.1 mm., III, 2.9-3.0 mm., IV, missing. Rostrum, segment I, 1.8-1.85 mm., II, 1.8-1.85 mm., III, 0.6-0.7 mm., IV, 1.0-1.05 mm. Pronotum, length, 2.4-2.5 mm., width, 2.7-2.9 mm. Hind femora, 6.0-6.2 mm. Hind tibia, 6.9-7.0 mm. Distance between ocelli, 0.45-0.5 mm., distance between an ocellus and an eye, 0.8-0.85 mm.

Body short. Head with ocelli pale, tinged pink at base ; distance between an ocellus and an eye usually only slightly less than twice the distance between two ocelli. Antennae brownish black, with basal portions of first segments pale. Rostrum approaching hind coxae. Lateral black line extending from collar of propleuron up to metapleuron. Disc of pronotum brownish black, with about anterior quarter pale, brownish black dots on posterior angles indistinct. Legs with fore femoral spines entirely black, all femora pale, but usually brownish black at apices, tibiae and tarsi dark brown. Hemielytra palish brown, with veins of similar colour, with pale spots pointing posteriorly. Abdomen ventrally palish brown, ventro-lateral spots absent. Posterior margin of seventh abdominal tergum truncate ; posterior margin of pygophore truncate (Text-fig. 400).

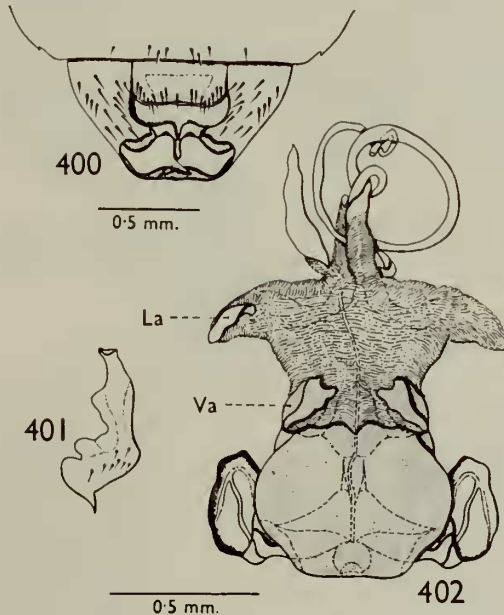
♂ GENITALIA : Claspers pointed at apices, points sharp, smoothly tapering (Text-fig. 401). Aedeagus with both dorsal and ventral pairs of thecal appendages ; a single left lateral conjunctival appendage long and thin (Text-fig. 402) ; a pair of asymmetrical supporting appendages, left longer and thinner ; a dorsal membranous appendage with a very small rounded terminal appendage.

No ♀ available for study.

Holotype ♂, PHILIPPINE ISLANDS : Mindanao-Davao (*Baker*), Mus. Hels.

Paratype, 1 ♂, same data as holotype, B.M.(N.H.).

This species can easily be separated from *limbaticollis* (Stål) and *sumatranus* Blöte by its small size and short pronotum.



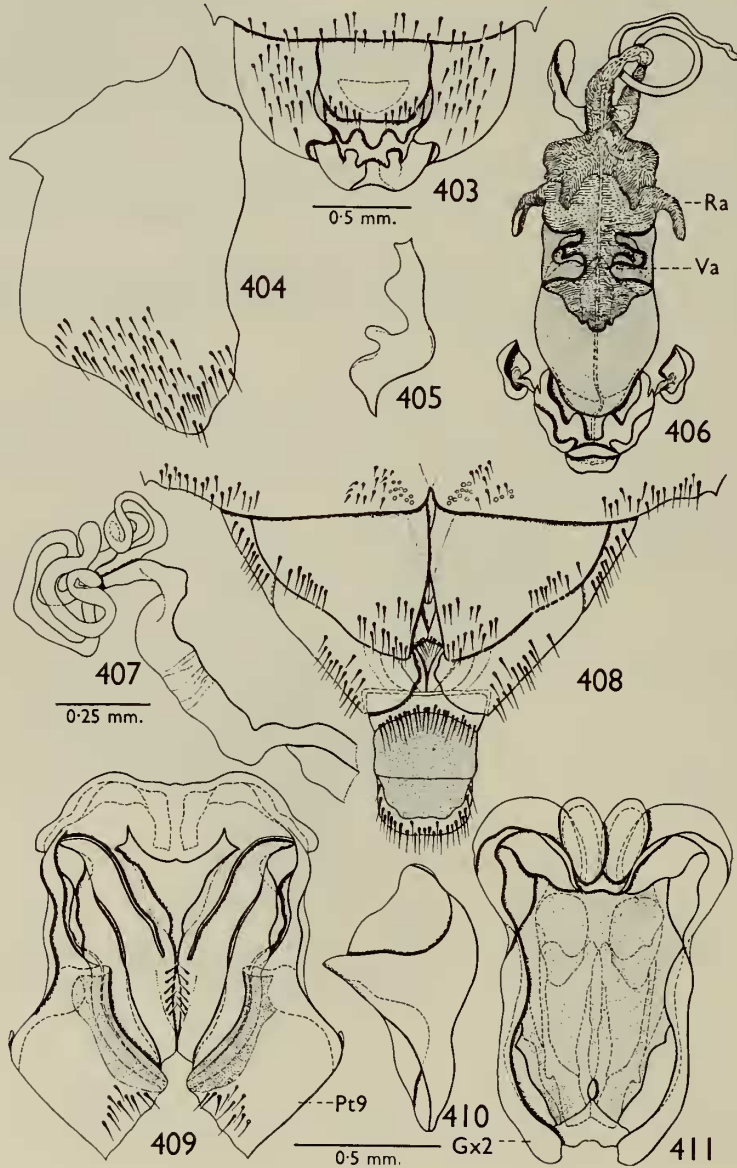
FIGS. 400-402. *Cosmoleptus bakeri*, ♂. 400, terminalia, dorsal view ; 401, claspers, outer view ; 402, aedeagus (inflated), ventral view.

Cosmoleptus limbaticollis (Stål)

(Text-figs. 403-411)

Lyrnessus limbaticollis Stål, 1865 : 185*Cosmoleptus limbaticollis* (Stål) Stål, 1873 : 87

Characterized by large and robust body, long pronotum, about three-fourths of basal antennal segments, with entire disc behind collar except the sides brownish black and by ♂ and ♀ genitalia.



♂. Body length, 16.2-17.2 mm., width, 3.1-3.3 mm. Head length, 1.9-2.0 mm., width, 2.0-2.1 mm. Antennae, segment I, 3.8-4.2 mm., II, 2.9-3.2 mm., III, 2.9-3.1 mm., IV, 5.4-6.2 mm., (pale portion, 2.5-3.0 mm.). Rostrum, segment I, 1.9-2.0 mm., II, 1.9-2.1 mm., III, 0.8-0.9 mm., IV, 1.1-1.2 mm. Pronotum, length, 3.0-3.2 mm., width, 3.1-3.3 mm. Hind femora, 6.7-7.2 mm. Hind tibiae, 7.8-8.2 mm. Distance between ocelli, 0.5-0.55 mm., distance between an ocellus and an eye, 1.0-1.1 mm.

Body large and robust. Head with ocelli usually pink with brownish black rim, distance between an ocellus and an eye about twice the distance between two ocelli. Antennae dark brown, with inner sides of basal segments and at least three-sevenths of basal portion of apical segments pale. Rostrum hardly approaching hind coxae. Entire pro-, meso-, and metapleuron and sternum, except coxae, dark brownish black. Entire disc of pronotum behind collar, except sides, dark brownish black, posterior angles without brownish black dots. Legs with fore femoral spines entirely dark brown, all femora pale, with brownish black apices, tibiae and tarsi palish brown. Hemelytra dark brown with palish veins, pale spots at base of membrane almost quadrilateral. Abdomen ventrally palish brown, brownish black ventrolateral spots absent. Posterior margin of seventh abdominal tergum medially emarginate and laterally convex, posterior margin of pygophore truncated (Text-fig. 403).

♂ GENITALIA: Claspers pointed at apices, points uniformly thick (Text-fig. 405). Aedeagus with both (dorsal and ventral) pairs of thecal appendages; a single left lateral conjunctival appendage present, small and thin (Text-fig. 406); a pair of asymmetrical supporting appendages, left large, curved and cup-shaped and a dorsal membranous appendage, terminal appendage wanting (Text-fig. 406).

♀. Very similar to ♂ but usually slightly smaller in size. Posterior margin of seventh abdominal sternum truncated, with a median fold (Text-fig. 408).

♀ GENITALIA: First gonocoxae pointed at apices, broad, covering a larger portion of eighth paratergite (Text-fig. 409); three pairs of intervalvular sacs (Text-fig. 411); spermatheca like an elongated tube with a small, uniformly thick, coiled tube (Text-fig. 407).

Type material. Holotype ♂, NEW GUINEA: "Stål", "*limbaticois*", Riksmus. Stockholm, allotype ♀, data as holotype, Riksmus. Stockholm; paratypes, NEW GUINEA: Ins. Aru, 1 ♂, Mysol (*Stevens*), Riksmus. Stockholm.

Other material. NEW GUINEA: 3 ♂, 4 ♀.

This species is restricted to New Guinea. Its range is the most easterly in the genus. The two other allopatric species are similarly restricted, *sumatranus* to Sumatra and *bakeri* to the Philippine Islands.

Cosmoleptus sumatranus Blöte

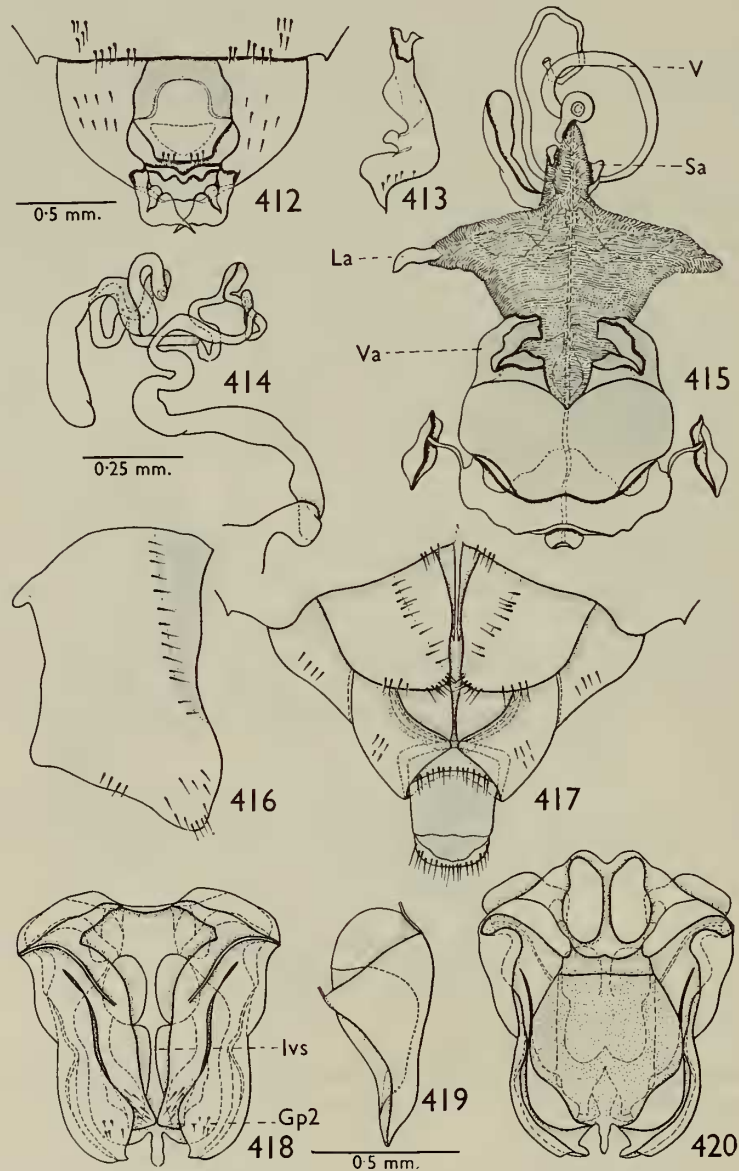
(Text-figs. 412-420)

Cosmoleptus sumatranus Blöte, 1934: 285

Characterized by uniformly pale venter of abdomen with a series of brownish black spots on either side, by the latero-posterior smooth brownish black dots on pronotum and by ♂ and ♀ genitalia.

FIGS. 403-411. *Cosmoleptus limbaticollis*, 403, 405-406, ♂, 404, 407-411, ♀. 403, terminalia, dorsal view; 404, first gonocoxa, ventral view; 405, claspers, outer view; 406, aedeagus (inflated), ventral view; 407, spermatheca; 408, terminalia, ventral view; 409, ovipositor, ventral view; 410, first gonopophysis, ventral view; 411, ovipositor, dorsal view.

♂. Body length, 15.7 mm., width, 3.2 mm. Head length, 1.7 mm., width, 1.9 mm. Antennae, segment I, 4.0 mm., II, 3.3 mm., III, 3.2 mm., IV, 4.9 mm. (pale, 2.0 mm.). Rostrum, segment I, 1.7 mm., II, 1.8 mm., III, 0.8 mm., IV, 1.1 mm. Pronotum, length, 3.0 mm.,



FIGS. 412-420. *Cosmoleptus sumatranus*, 412, 413, 415, ♂, 414, 416-420, ♀. 412, terminalia, dorsal view; 413, claspers, inner and outer views; 414, spermatheca; 415, aedeagus (inflated), ventral view; 416, first gonocoxa, ventral view; 417, terminalia, ventral view; 418, ovipositor, ventral view; 419, first gonopophysis, ventral view; 420, ovipositor, dorsal view.

width, 3.2 mm. Hind femora, 6.4 mm. Hind tibia, 7.4 mm. Distance between ocelli, 0.5 mm distance between an ocellus and an eye, 0.9 mm.

Body linear. Head with ocelli pale with reddish rim, distance between an ocellus and an eye usually less than twice the distance between two ocelli. Antennae dark brown, with basal portions of first and about two-fifths of apical segment pale. Rostrum approaching hind coxae. Lateral black line extending from posterior margin of eyes up to metapleuron. Disc of pronotum dark brown, with about anterior third pale, smooth brownish black dots on posterior angles present. Legs with fore femoral spines pale, only brownish black at apices, all femora pale, tibiae and tarsi brown. Hemelytra brownish black with prominently pale veins, pale spots at base of membrane pointing anteriorly. Abdomen ventrally pale, unicolourous, with a series of brownish black spots on either side. Posterior margin of seventh abdominal tergum truncate ; posterior margin of pygophore emarginate (Text-fig. 412).

♂ GENITALIA : Claspers pointed at apices, points knob-like, thicker at base (Text-fig. 413) ; aedeagus with both (dorsal and ventral) pairs of thecal appendages, a single left lateral conjunctival appendage flat ; a pair of asymmetrical supporting appendages, left larger and broader, and a dorsal membranous appendage with a terminal pyramid-shaped appendage (Text-fig. 415).

♀. Very similar to male in general appearance and measurements. Posterior margin of seventh abdominal sternum sinuately emarginate (Text-fig. 417).

♀ GENITALIA : First gonocoxae round at apices, narrow, not covering entire eighth paratergite (Text-fig. 417) ; two pairs of intervalvular sacs (Text-fig. 420) ; spermatheca more or less tubular, with a very long tube of variable thickness (Text-fig. 414).

Type material. Holotype ♂, SUMATRA : Tandjong, Morawa, Serdang (*B. Hagen*), labelled "*Cosmoleptus sumatranus* det Blöte", Mus. Leiden ; allotype ♀, data as holotype, Mus. Leiden.

This species can easily be separated from *limbaticollis* (Stål) and *bakeri* sp. n. by the characters of latero-posterior smooth brownish black dots on pronotum and by a series of ventro-lateral brownish black spots on uniformly pale venter of abdomen. This species also resembles *Lyrnessus geniculatus* (Guérin) and *Stenocoris (Pseudo-leptocoris) erratica* (Blöte) in having brownish black hemelytra with prominently pale veins.

NOLIPHUS Stål

Noliphus Stål, 1858 : 440, 1873 : 86-87

Type-species : *Noliphus erythrocephalus* Stål by monotypy.

Body usually robust. Head triangular. Antennae with apices of basal segments slightly thicker. Rostrum long, reaching hind coxae. Pronotal disc trapeziform, posterior angles with strong and curved spines (Text-fig. 6).

In ♂, posterior margin of seventh abdominal tergum truncated, sometimes slightly medially produced (Text-fig. 439), always concealing most of pygophore ; claspers with pointed apices ; aedeagus with both (dorsal and ventral) pairs of thecal appendages, membranous appendage with a long and curved dorsal appendage and usually two pairs of lateral conjunctival appendages (Text-fig. 441) ; frontal conjunctival and terminal appendages wanting.

In ♀, posterior margin of seventh abdominal sternum emarginate, with a median fold (Text-fig. 444) ; first gonocoxae usually large ; intervalvular sacs absent ; spermatheca conical, with a short tube (Text-fig. 443).

This genus can be separated from other genera of the tribe Noliphini by the strong and curved spines on the posterior angles of the pronotum.

KEY TO SPECIES

- 1 Entire propleuron and pronotum shining black ; apical antennal segments long, usually half as long again as third 2
- Propleuron and pronotum light brown, sometimes tinged with black ; apical antennal segments short, never half as long again as third 5
- 2 Venter of abdomen pale brown, unicolourous ; ocelli pale brown, unicoloured, minute, interocellar distance less than half the distance between an ocellus and an eye. (Posterior margin of seventh abdominal tergum truncated, slightly medially produced (Text-fig. 448) ; in aedeagus, second right lateral conjunctival appendage partly membranous (Text-fig. 450)) *insularis* (p. 138)
- Venter of abdomen always with black spots or markings ; ocelli with conspicuous brownish black margins, large interocellar distance, usually more than half the distance between an ocellus and an eye 3
- 3 Large and robust species (♂ 13.5–15.2 mm., ♀ 15.2–16.0 mm.) ; venter of abdomen with four black transverse lines ; usually basal halves of apical antennal segments pale. (Posterior margin of seventh abdominal tergum truncate (Text-fig. 451) ; in aedeagus, frontal conjunctiva with bunches of spines (Text-fig. 452) ; in the ♀ first gonocoxae triangular, with rounded apices (Text-fig. 457)) *papuensis* (p. 140)
- Small species (♂ 12.4–13.2 mm., ♀ 12.8–13.6 mm.) ; black transverse lines on venter of abdomen absent ; only small basal portions of apical antennal segments pale 4
- 4 A pair of black dots present anteriorly on venter of abdomen ; basal antennal segments slightly shorter than third ; ocelli comparatively distant from each other, interocellar distance about two-thirds of the distance between an ocellus and an eye. (Claspers symmetrically placed (Text-fig. 461) ; in the aedeagus, second right lateral conjunctival appendage only slightly notched near apex (Text-fig. 466) ; spermatheca elongated, with smooth curved neck (Text-fig. 465)) *spinosus* (p. 142)
- Round black dots absent, but two black marks present on either side, being a continuation of the connexival colour on to venter of abdomen ; basal antennal segments slightly longer than third ; ocelli comparatively close together, interocellar distance about half the distance between an ocellus and an eye. (Claspers asymmetrically placed (Text-fig. 440) ; second right lateral conjunctival appendage distinctly bifid at apex (Text-fig. 441) ; spermatheca curved, with a transverse neck (Text-fig. 443)) *erythrocephalus* (p. 137)
- 5 Species of very small size (8.4–10 mm. in length) ; basal antennal segments very short, subequal to second ; third rostral segment comparatively longer, more than half of second. (In ♂, backward lateral projections of seventh abdominal tergum inconspicuous ; aedeagus with long and curved dorsal appendage, rounded at apex ; in ♀, spermatheca almost tube-shaped, with thumb-like base (Text-fig. 434)) *discopterus* (p. 135)
- Species larger (12.0–13.5 mm.) ; basal antennal segments distinctly longer than second ; third rostral segment comparatively short, distinctly half the length of the second 6
- 6 A pair of black dots present anteriorly on each side of venter of abdomen ; hemielytra usually pale, unicolourous. (Posterior margin of ♂ seventh abdominal tergum with backward spine-like projections on either side (Text-fig. 421) ; in aedeagus, frontal conjunctiva with usually two or three spines (Text-fig. 425) ; posterior margin of ♀ seventh abdominal sternum deeply emarginate (Text-fig. 427)) *annulipes* (p. 133)
- Without black dots on venter of abdomen ; hemielytra tinged with black. (Backward spine-like processes of the posterior margin of the ♂ seventh abdominal tergum absent (Text-fig. 469) ; in the aedeagus, frontal conjunctiva with a bunch of spines (Text-fig. 472)) *timoris* (p. 144)

Noliphus annulipes Walker

(Text-figs. 421-429)

Noliphus annulipes Walker, 1871 : 176

Characterized by the light brown pronotum and propleuron with two smooth black dots (in linear order) anteriorly on either side of the venter of abdomen and by the form of the ♂ and the ♀ genitalia.

♂. Body length, 12.0-13.2 mm., width, 2.3-2.5 mm. Head length, 1.4-1.5 mm., width, 1.6-1.7 mm. Antennae, segment I, 2.3-2.5 mm., II, 2.0-2.2 mm., III, 2.3-2.4 mm., IV, 3.1-3.2 mm. Rostrum, segment I, 1.4-1.5 mm., II, 1.4-1.6 mm., III, 0.7-0.75 mm., IV, 1.0-1.2 mm. Pronotum, length, 2.2-2.4 mm., width, 2.3-2.5 mm. Hind femora, 5.6-6.0 mm. Hind tibia, 6.0-6.4 mm. Distance between ocelli, 0.4-0.5 mm., distance between an ocellus and an eye, 0.85-0.9 mm.

Body of medium size, light brown. Head, underside pale. Antennae pale, with apices of first, second and third segments black and apical segments brownish black, only pale at bases. Rostrum comparatively short, reaching anterior margin of third coxae. Propleuron pale, sometimes tinged brown, usually with a brownish black line extending from sides of posterior margin of eyes on to anterior third of propleuron. Pronotal disc light brown, posteriorly with brownish black tinge; spines on posterior angles thicker in middle, apices pointed. Legs usually pale, with apices of femora, bases of tibiae and tarsi brownish black. Hemelytra pale, with brownish black tinge and punctures. Abdomen, dorsum palish brown, third, fourth, fifth and sixth connexiva on either side with black spots, venter pale, sometimes tinged brown, with black triangular marks pointing posteriorly in middle of fifth and sixth segments, seventh medially black. Posterior margin of seventh abdominal tergum medially convex, laterally on either side with spine-like backward projections, concealing about half of pygophore; pygophore with emarginate posterior margin (Text-fig. 421).

♂ GENITALIA: Claspers asymmetrically placed, (Text-fig. 421); both (dorsal and ventral) pairs of thecal appendages present; two pairs of left lateral conjunctival appendages as in Text-fig. 425; two pairs of lateral conjunctival appendages, second right, bifid at apex as in Text-fig. 425; dorsal conjunctival appendage thicker at base and curved near apex (Text-fig. 425); frontal conjunctiva usually with two or three spines.

♀. Body length, 12.8-13.6 mm., width, 2.5-2.7 mm. Head length, 1.4-1.6 mm., width, 1.7-1.8 mm. Antennae, segment I, 2.2-2.6 mm., II, 2.0-2.3 mm., III, 2.2-2.5 mm., IV, 3.0-3.3 mm. Rostrum, segment I, 1.5-1.6 mm., II, 1.56-1.65 mm., III, 0.75-0.85 mm., IV, 1.2-1.3 mm. Pronotum, length, 2.3-2.5 mm., width, 2.5-2.7 mm. Hind femora, 5.6-6.2 mm. Hind tibia, 6.0-6.6 mm. Distance between ocellum 0.5 mm., distance between an ocellus and an eye, 0.9 mm.

Very similar to ♂ but slightly larger, with external genitalia usually pale unicolourous; posterior margin of seventh abdominal sternum greatly emarginate, with a short median split and a fold and backward spine-like projections on either side (Text-fig. 427).

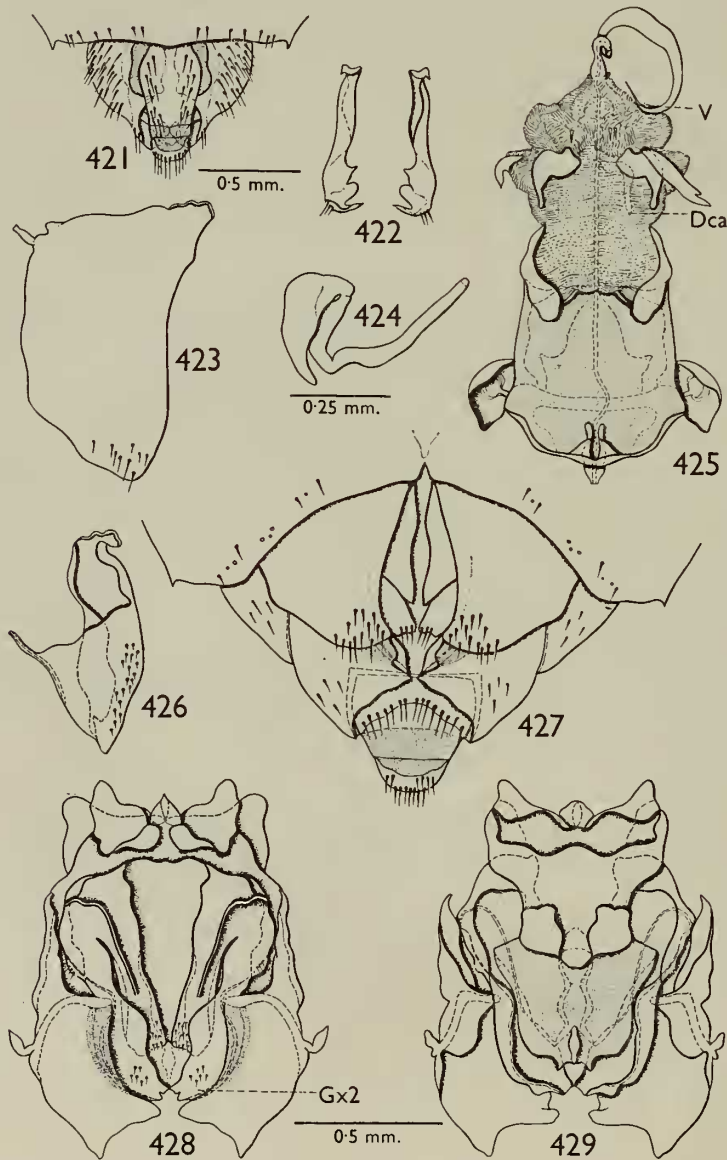
♀ GENITALIA: First gonocoxae large, seen from above externally broader than long, with irregular outer margin and round apices (Text-fig. 423); intervalvular sacs absent (Text-fig. 429); spermatheca with a broad neck (Text-fig. 424).

Type material. Holotype ♂, CELEBES: presented by Saunders (pygophore missing), B.M.(N.H.).

Other material. CELEBES: 1 ♀; AMBOINA ISLANDS: 3 ♂, 1 ♀; AUSTRALIA: 7 ♂, 9 ♀.

The range of this species extends in the west into Java and in the south east into the Northern Territory and Queensland (Australia).

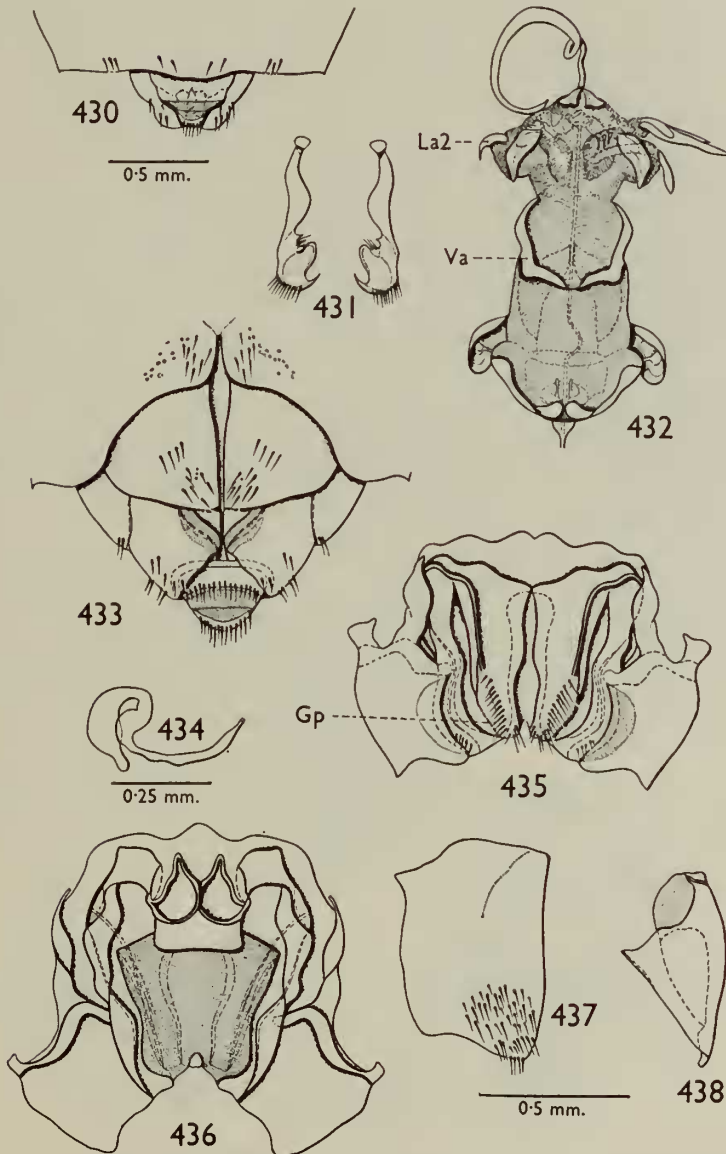
This species is very close to *discopterus* Stål, from which it can easily be separated by the larger size of the body (12.0–13.6 mm.) (*discopterus* being smaller—8.4–10.5 mm.).



FIGS. 421–429. *Noliphus annulipes*, 421, 422, 425, ♂, 423, 424, 426–429, ♀. 421, terminalia, dorsal view; 422, claspers, inner and outer views; 423, first gonocoxa, ventral view; 424, spermatheca; 425, aedeagus (inflated), ventral view; 426, first gonopophysis, ventral view; 427, terminalia, ventral view; 428, ovipositor, ventral view; 429, same, dorsal view.

Noliphus discopterus Stål

(Text-figs. 430-438)

Noliphus discopterus Stål, 1873 : 87

FIGS. 430-438. *Noliphus discopterus*, 430-432, ♂, 433-438, ♀. 430, terminalia, dorsal view; 431, claspers, inner and outer views; 432, aedeagus (inflated), ventral view; 433, terminalia, ventral view; 434, spermatheca; 435, ovipositor, ventral view; 436, same, dorsal view; 437, first gonocoxa, ventral view; 438, first gonopophysis, ventral view.

Characterized by small body ranging from 8.4–10.5 mm. ; by the short basal antennal segment, which is subequal to the second and by the form of the ♂ and ♀ genitalia.

♂. Body length, 8.4–10.5 mm., width, 1.7–2.0 mm. Head length, 1.3–1.5 mm., width, 1.5–1.6 mm. Antennae, segment I, 2.0–2.1 mm., II, 1.9–2.0 mm., III, 2.0–2.2 mm., IV, 2.7–2.9 mm. Rostrum, segment I, 1.3–1.4 mm., II, 1.3–1.4 mm., III, 0.66–0.76 mm., IV, 1.0–1.2 mm. Pronotum, length, 1.7–2.0 mm., width, 1.7–2.0 mm. Hind femora, 4.8–5.2 mm. Hind tibia, 5.3–5.6 mm. Distance between ocelli, 0.4–0.5 mm., distance between an ocellus and an eye, 0.7–0.8 mm.

Body of small size, usually pale, tinged brownish black. Head behind ocelli brownish black, underside, except brownish black bucculae and rostrum, pale unicoloured. Antennae with apices of first, second and third segments brownish black, apical segments brownish black with small basal portions pale. Rostrum comparatively long, extending beyond third coxae. Propleuron pale, sometimes tinged with brown, with a black lateral line extending from posterior margin of eye on to posterior of propleuron. Pronotal disc pale, tinged with light brown with brownish black punctures, spines on posterior angles slanting posteriorly, acutely pointed. Legs pale, with apices of femora, tibiae and tarsi brownish black. Hemelytra pale, with dark brownish black costal margins, densely punctate. Abdomen, dorsum pale, with black marks on third, fourth, fifth and sixth connexiva, seventh black, venter yellowish brown, third, fourth and fifth with black marks in continuation with connexival marks on margins, round black dots on third and fourth venter present on either side, median portion of seventh, visible portion of eighth and pygophore brownish black. Posterior margin of seventh abdominal tergum sinuate (without backward spine-like projections), medially convex, pygophore curved near apex, posterior margin truncate (Text-fig. 430).

♂ GENITALIA : Claspers asymmetrically placed (Text-fig. 430) ; both (dorsal and ventral) pairs of thecal appendages present, two pairs of lateral conjunctival appendages as in Text-fig. 432 ; second right bifurcated from the middle ; dorsal conjunctival appendage bow-shaped (Text-fig. 432) ; frontal conjunctiva usually with three spines, close together.

♀. Very similar to ♂ in general appearance and measurements, seventh abdominal venter and genital structures pale ; posterior margin of seventh abdominal sternum greatly emarginate, with a large median split and a fold ; backward spine-like projections on either side present (Text-fig. 433).

♀ GENITALIA : First gonocoxae of medium size, externally as long as broad (Text-fig. 433) ; triangular in form and rounded at apices (Text-fig. 438) ; intervalvular sacs absent (Text-fig. 436) ; spermatheca almost tubular, thicker in middle and thumb-like at apices (Text-fig. 434).

Type material. Holotype ♂, SAMOAN ISLANDS : (*Schmeltz*), labelled “*discopterus*”, Riksmus. Stockholm.

Other material. SAMOAN ISLANDS : 2 ♂, 1 ♀ ; NEW HEBRIDES : 1 ♂, 1 ♀.

The range of this species extends in the west into New Hebrides and in the east into Samoa Islands. Adults have been found in November and December.

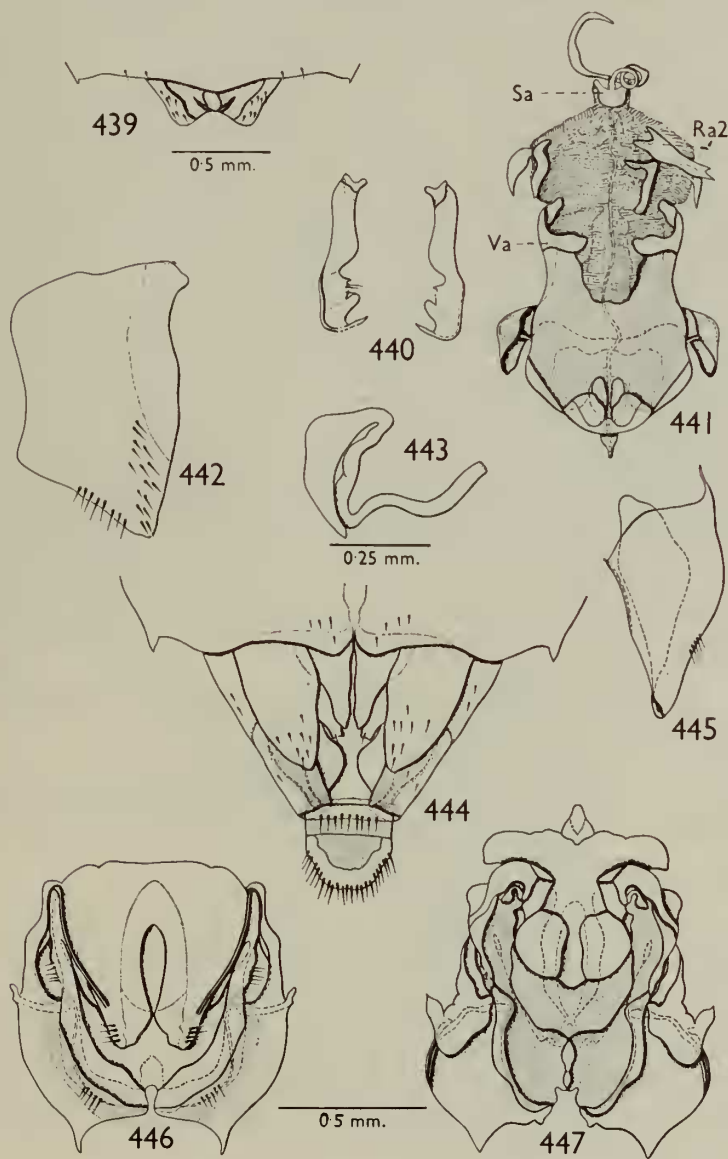
Noliphus erythrocephalus Stål

(Text-figs. 439–447)

Noliphus erythrocephalus Stål, 1858 : 440, 1873 : 87

Characterized by dark black pronotum, propleuron and underside of the head, by two black marks on the ventro-lateral of abdomen and by the form of the ♂ and ♀ genitalia.

♂. Body length, 12.4–12.8 mm., width, 2.3–2.5 mm. Head length, 1.5–1.6 mm., width, 1.6–1.8 mm. Antennae, segment I, 2.5–2.6 mm., II, 2.2–2.4 mm., III, 2.4–2.5 mm., IV, 3.8–4.0 mm. Rostrum, segment I, 1.4–1.6 mm., II, 1.6–1.75 mm., III, 0.7–0.9 mm., IV, 1.2–1.3 mm. Pronotum, length, 2.3–2.5 mm., width, 2.3–2.5 mm. Hind femora, 5.6–6.0 mm.



FIGS. 439–447. *Noliphus erythrocephalus*, 439–441, ♂, 442–447, ♀. 439, terminalia, dorsal view; 440, claspers, inner and outer views; 441, aedeagus (inflated), ventral view; 442, first gonocoxa, ventral view; 443, spermatheca; 444, terminalia, ventral view; 445, first gonopophysis, ventral view; 446, ovipositor, ventral view; 447, same, dorsal view.

Hind tibia, 6.4–6.7 mm. Distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.9 mm.

Body of medium size, brownish black. Head yellowish brown, post-occipital region black, underside including apex of clypeus, bucculae and rostrum shining black. Antennae with apices of first, second and third brownish black, apical segment brownish black, pale only at base. Rostrum long, usually extending beyond posterior margin of third coxae. Propleuron shiny black. Pronotal disc usually shining black, densely punctate. Spines on posterior angles, thicker and curved at bases, tapering smoothly towards apices, pointed. Legs brownish black, with bases of femora, tibiae and tarsi pale. Hemelytra palish brown, with costal margins and parts of corium dark black. Abdomen, dorsum yellowish brown, seventh black; third to sixth connexiva with black marks continuous on sides of venter. Venter, palish brown with black triangular mark pointing posteriorly in middle of fifth and sixth segments, seventh, visible portions of eighth and pygophore dark black. Posterior margin of seventh abdominal tergum sinuate and medially convex, on either side with spine-like backward projections, concealing about three-quarters of pygophore; pygophore tapering posteriorly with emarginate posterior margin (Text-fig. 439).

♂ GENITALIA: Claspers asymmetrically placed (Text-fig. 439); both dorsal and ventral pairs of thecal appendages present, two pairs of lateral appendages, second right bifurcated at apex, with distinct branches; dorsal appendage usually "L"-shaped; frontal conjunctiva usually without spines (Text-fig. 441).

♀. Body length, 13.0–13.6 mm., width, 2.4–2.7 mm. Head length, 1.5–1.65 mm., width, 1.8–1.9 mm. Antennae, segment I, 2.5–2.6 mm., II, 2.3–2.4 mm., III, 2.5–2.6 mm., IV, missing. Rostrum, segment I, 1.6–1.7 mm., II, 1.6–1.66 mm., III, 0.8–0.9 mm., IV, 1.3–1.35 mm. Pronotum, length, 2.4–2.6 mm., width, 2.4–2.7 mm. Hind femora, 6.0–6.5 mm. Hind tibia, 6.9–7.2 mm. Distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.9 mm.

Very similar to ♂ in general appearance but usually distinctly larger; seventh venter of abdomen and genitalia externally black; posterior margin of seventh abdominal sternum sinuately emarginate, with a short median split and a median fold; spine-like backward projections on either side present (Text-fig. 444).

♀ GENITALIA: First gonocoxae small, externally longer than broad, outer margin regular, apices pointed and inner margin irregular (Text-fig. 442); intervalvular sacs absent (Text-fig. 447); spermatheca with a hump-shaped neck (Text-fig. 443).

Type material. Lectotype ♂, AUSTRALIA: Queensland, Cape York (*Jhorey*), Riksmus. Stockholm; allotype ♀, data as holotype, Riksmus. Stockholm.

Other material. AUSTRALIA: 5 ♂, 4 ♀.

This species has restricted range in north east Australia (Queensland).

This species is close to *spinusus* sp. n. but can be separated by the absence of ventro-lateral smooth black dots on anterior of abdominal venter.

Six specimens (3 ♂, 3 ♀) were obtained from the Riksmuseum, Stockholm. None was clearly labelled as the type and in a personal communication Dr. Kjellander informed me that Stål often failed to fix a definite type-specimen. Therefore one ♂ specimen from Cape York (Queensland) has been selected as the lectotype and has been given a lectotype label.

Noliphus insularis Stål

(Text-figs. 448–450)

Noliphus insularis Stål, 1865: 185, 1873: 87

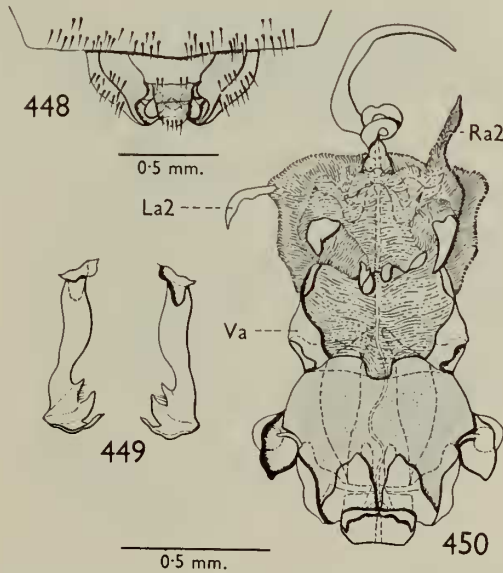
Characterized by yellowish brown unicoloured abdominal venter, palish brown unicoloured minute ocelli, about a third of basal portion of apical antennal segment pale and by the form of the ♂ and ♀ genitalia.

♂. Body length, 13.5–15.2 mm., width, 2.1–2.4 mm. Head length, 1.5–1.7 mm., width, 1.7–1.85. Antennae, segment I, 3.1–3.6 mm., II, 2.7–3.1 mm., III, 2.8–3.2 mm., IV, 5.1 mm. Rostrum, segment I, 1.66–1.7 mm., II, 1.7–1.8 mm., III, 0.8–0.96 mm., IV, 1.3–1.4 mm. Pronotum, length, 2.1–2.4 mm., width, 2.1–2.4 mm. Hind femora, 5.9–6.4 mm. Hind tibia, 6.8–8.0 mm. Distance between ocelli, 0.4 mm., distance between an ocellus and an eye, 0.86–0.96 mm.

Body elongated and slim, tinged brown. Head pale, unicolourous, dorsal and ventral; antennae brownish black, at least a third basal portion of apical segment pale. Rostrum long, extending well beyond third coxae. Propleuron including procoxae, mesopleuron and underside of collar brownish black. Pronotal disc brownish black with at least anterior quarter pale; latero-posterior spines long, thin, curved near apices and acutely pointed. Legs brownish black, with at least basal half of femora pale. Entire hemielytra, except pale costal margin, brownish black, densely punctate. Abdomen, dorsum including connexiva pale, unicoloured; abdomen ventrally pale unicolourous, including seventh venter and visible portion of eighth segment and pygophore. Posterior margin of seventh abdominal tergum truncated, slightly medially convex, with backward spine-like projection on either side, concealing two-thirds of pygophore; pygophore curved and tapering at apex, posterior margin concave (Text-fig. 448).

♂ GENITALIA: Claspers symmetrically placed (Text-fig. 448); both (dorsal and ventral) pairs of thecal appendages present, two pairs of lateral conjunctival appendages (Text-fig. 450), second right partly sclerotized (Text-fig. 451); frontal conjunctiva with two sclerotized rounded pieces in middle of basicconjunctiva and a spiny appendage on right, top of first right lateral conjunctival appendage; membranous appendage with a bow-shaped dorsal appendage, strongly curved in middle (Text-fig. 450).

No ♀ available for study.



FIGS. 448–450. *Noliphus insularis*, ♂. 448, terminalia, dorsal view; 449, claspers, inner and outer views; 450, aedeagus (inflated), ventral view.

Type material. Holotype ♂, INS. FIJI (Fidschi) (*Jhorey*), Riksmus. Stockholm.

Other material. NEW HEBRIDES : 2 ♂.

This species is close to *papuensis* Stål but can easily be separated by examining pale uncoloured abdomen.

Noliphus papuensis Stål

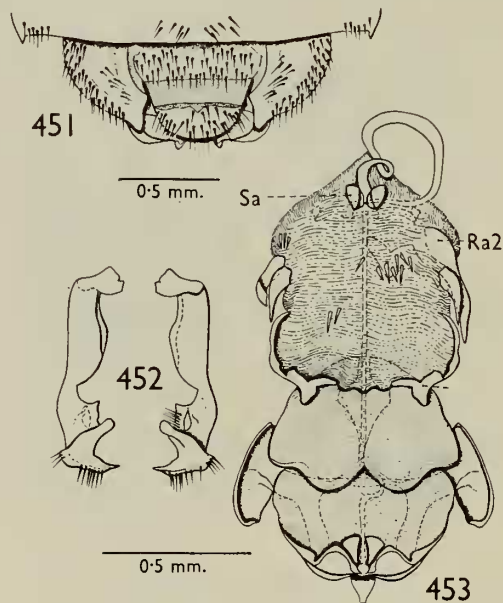
(Text-figs. 451-459)

Noliphus papuensis Stål, 1865 : 185, 1873 : 87

Characterized by its large size, by at least basal half of apical segments of antennae being pale, by the four black transverse lines on the underside of abdomen and by the structure of the ♂ and ♀ genitalia.

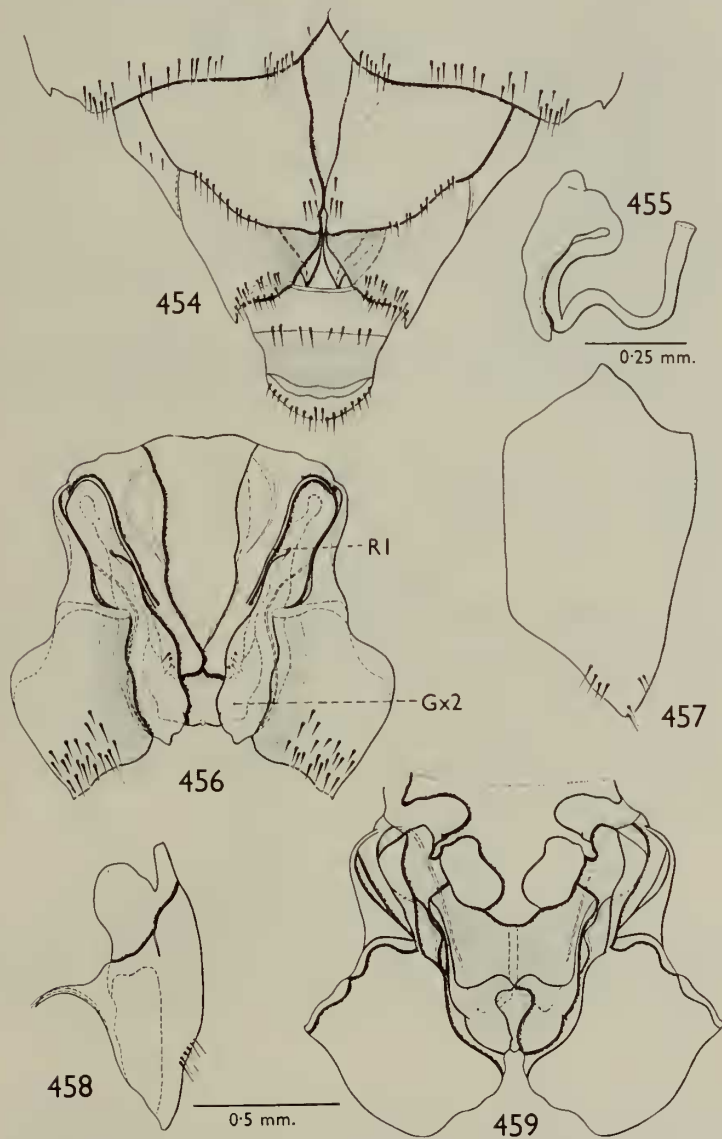
♂. Body length, 13.5-15.2 mm., width, 2.3-2.6 mm. Head length, 1.66-1.8 mm., width, 1.8-2.0 mm. Antennae, segment I, 3.5-4.4 mm., II, 3.2-3.3 mm., III, 3.3-3.6 mm., IV, 4.8-5.0 mm. (2.4-2.6 mm. pale). Rostrum, segment I, 1.7-2.0 mm., II, 1.7-2.1 mm., III, 0.9-1.0 mm., IV, 1.4-1.6 mm. Pronotum, length, 2.3-2.7 mm., width, 2.3-2.6 mm. Hind femora, 6.5-8.0 mm. Hind tibia, 7.7-9.1 mm. Distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.9 mm.

Large and robust body, shining black. Head pale unicolourous. Antennae brownish black, with bases of first, second, third and at least basal half of apical segment pale. Rostrum long, usually extending well beyond third coxae. Propleuron shining brownish black. Pronotal disc shining brownish black, collar dorsally pale with small punctures, spines on posterior angles short, curved near base and smoothly tapering apically. Legs yellowish brown, with apices of



FIGS. 451-453. *Noliphus papuensis*, ♂. 451, terminalia, dorsal view ; 452, claspers, inner and outer views ; 453, aedeagus (inflated), ventral view.

femora, bases of tibiae, tarsi brownish black. Entire hemielytra brownish black, clavus and corium densely punctate. Abdomen, dorsum including connexival areas and pygophore brownish black; abdomen venter, except two anterior brownish black segments, pale with four brownish black transverse lines, lateral margins brownish black, including visible portions of eighth and ninth (pygophore) segments. Posterior margin of seventh abdominal tergum



FIGS. 454-459. *Noliphus papuensis*, ♀. 454, terminalia, ventral view; 455, spermatheca; 456, ovipositor, ventral view; 457, first gonocoxa, ventral view; 458, first gonopophysis, ventral view; 459, ovipositor, dorsal view.

slightly convex, with a backward spiny process on either side on lateral extremities, concealing about two-thirds of pygophore ; pygophore rounded, curved near apex, posterior margin slightly concave (Text-fig. 451).

♂ GENITALIA : Claspers symmetrically placed (Text-fig. 451), dorsal and ventral thecal appendages present ; two pairs of lateral conjunctival appendages (Text-fig. 453) asymmetrical ; frontal conjunctiva with bunches of spines, usually about fifteen, second right lateral conjunctival appendage thicker at base and near apex, curved in middle and pointed at apex ; membranous appendage with an elongated irregular dorsal appendage (Text-fig. 453).

♀. Body length, 15.2–16.0 mm., width, 2.67–2.7 mm. Head length, 1.7–1.9 mm., width, 1.9–2.0 mm. Antennae, segment I, 3.6–3.9 mm., II, 2.9–3.4 mm., III, 3.3–3.6 mm., IV, 5.2–5.33 mm. Rostrum, segment I, 1.8–2.2 mm., II, 2.0–2.2 mm., III, 1.0–1.1 mm., IV, 1.5–1.6 mm. Pronotum, length, 2.6–2.7 mm., width, 2.6–2.7 mm. Hind femora, 7.5–7.6 mm. Hind tibia, 8.5–8.7 mm. Distance between ocelli, 0.5–0.6 mm., distance between an ocellus and an eye, 0.85–0.95 mm.

Very similar to ♂ in general appearance but distinctly larger ; seventh abdominal sternum and genital structures usually pale, tinged brownish black. Posterior margin of seventh abdominal sternum emarginate, with a median split and a large median fold making two smaller lobes, one on each side at extremities, with a backward spiny process on each side (Text-fig. 454).

♀ GENITALIA : First gonocoxae large, seen from outside, broader than long, almost conical in form, with lobe-like apices and medially curved and concave external margin (Text-fig. 458). Intervalvular sacs absent (Text-fig. 459) ; spermatheca elongated, flat and hump-shaped near apex (Text-fig. 455).

Type material. Holotype ♂, NEW GUINEA : “ Stål ”, “ *papuensis* ”, Riksmus. Stockholm.

Other material. NEW GUINEA : 21 ♂, 8 ♀ ; MISOOL ISLANDS : 1 ♂ ; CERAM ISLANDS : 1 ♂.

This species is completely isolated in the genus and can be easily separated from other species by its entirely brownish black hemielytra, by brownish black dorsum of abdomen, black transverse lines on the ventral side of abdomen, long rostrum extending well beyond hind coxae and by pale colouration of basal half of apical segment of antennae. This species shows some relationship with *Cosmoleptus limbaticollis* (Stål) in having similar shape and colouration of pronotum and almost similar form of the apical antennal segment.

Noliphus spinosus sp. n.

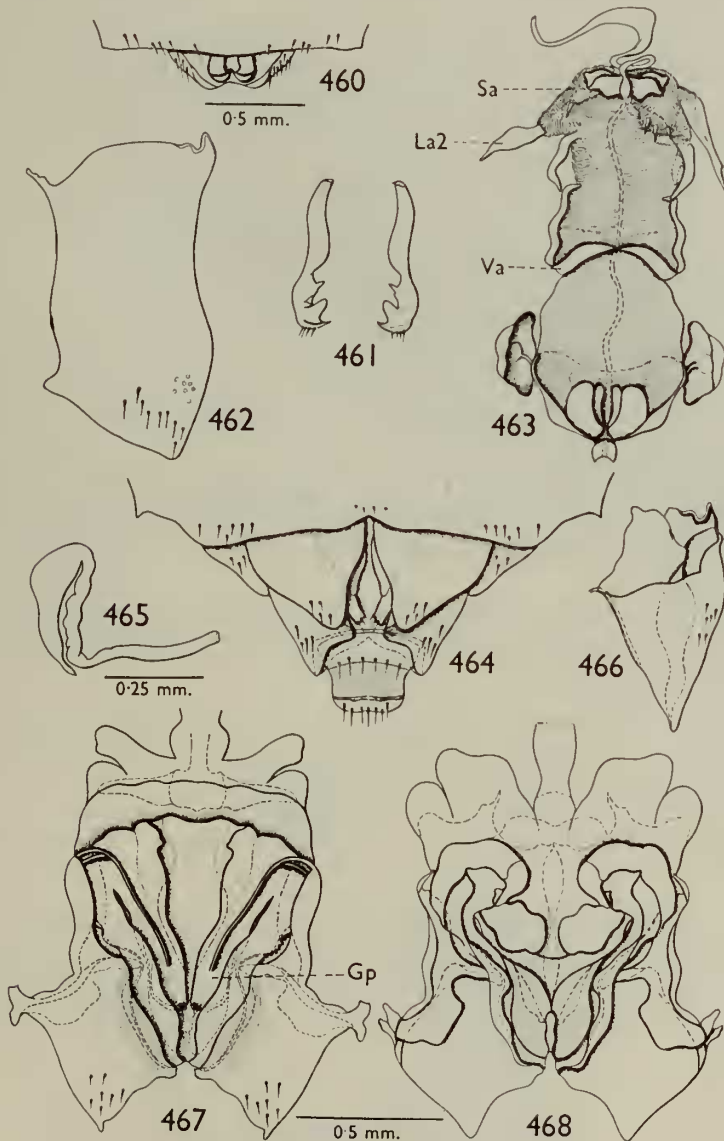
(Text-figs. 460–468)

Characterized by the black propleuron, pronotum and usually black underside of head and two round and smooth black dots in succession on either side of venter of abdomen, by the short basal segment of antennae, and by the form of ♂ and ♀ genitalia.

♂. Body length, 12.5–13.2 mm., width, 2.3–2.4 mm. Head length, 1.4–1.5 mm., width, 1.6–1.7 mm. Antennae, segment I, 2.3–2.5 mm., II, 2.2–2.4 mm., III, 2.4–2.6 mm., IV, missing. Rostrum, segment I, 1.4–1.7 mm., II, 1.6–1.7 mm., III, 0.75–0.8 mm., IV, 1.2–1.3 mm. Pronotum, length, 2.3–2.4 mm., width, 2.3–2.4 mm. Hind femora, 6.0 mm. Hind tibia, 7.2 mm. Distance between ocelli, 0.5–0.6 mm., distance between an ocellus and an eye, 0.83–0.85 mm.

Body of medium size, brownish black. Head usually yellowish brown, median post-occipital

region brownish black, underside of head, including apex of clypeus, bucculae and second, third and fourth segment of rostrum black, but underside of head sometimes yellowish brown. Antennae pale, with apices of first, second and third segments black, apical segment brownish black with a small basal portion pale. Rostrum usually long, extending slightly beyond third



FIGS. 460-468. *Noliphus spinosus*, 460, 461, 463, ♂, 462, 464-468, ♀. 460, terminalia, dorsal view; 461, claspers, inner and outer views; 462, first gonocoxa, ventral view; 463, aedeagus (inflated), ventral view; 464, terminalia, ventral view; 465, spermatheca; 466, first gonopophysis, ventral view; 467, ovipositor, ventral view; 468, same, dorsal view.

coxae. Propleuron shining brownish black. Pronotal disc usually shining brownish black, densely punctate posteriorly, spines on posterior angles comparatively short, thicker in middle and acutely pointed at apices. Legs usually brownish black, with basal half of femora entire, middle of tibiae and bases of tarsi pale. Hemelytra brownish black, with clavus and a portion of corium yellowish brown, with brownish black punctures. Abdomen, dorsum yellowish brown, seventh segment black, third, fourth, fifth and sixth connexiva with black spots; abdomen venter yellowish brown, with black semicircular spots on fifth and sixth venter, visible portion of eighth and (pygophore) ninth usually black. Posterior margin of seventh abdominal tergum truncated, only slightly convex medially, concealing about three-quarters of pygophore, with very small backward spiny processes on either side; pygophore round, tapering posteriorly with emarginate posterior margin (Text-fig. 460).

♂ GENITALIA: Claspers symmetrically placed (Text-fig. 460), both (dorsal and ventral) pairs of thecal appendages present; two pairs of lateral conjunctival appendages, right thicker at base and bifid at apex, frontal conjunctiva usually with four spiny appendages (three on one side and one on the other) (Text-fig. 463); membranous appendage with a "V"-shaped dorsal appendage, thicker at base and curved near base and apex (Text-fig. 463).

♀. Body length, 12.8–13.5 mm., width, 2.5–2.6 mm. Head length, 1.45–1.7 mm., width, 1.7–1.8 mm. Antennae, segment I, 2.4–2.6 mm., II, 2.2–2.5 mm., III, 2.4–2.7 mm., IV, 3.6–3.7 mm. Rostrum, segment I, 1.5–1.7 mm., II, 1.6–1.7 mm., III, 0.7–0.9 mm., IV, 1.1–1.3 mm. Pronotum, length, 2.2–2.6 mm., width, 2.1–2.5 mm. Hind femora, 5.6–6.4 mm. Hind tibia, 6.7–7.2 mm. Distance between ocelli, 0.5–0.6 mm., distance between an ocellus and an eye, 0.8–0.9 mm.

Very similar to ♂ in general shape and colour but usually longer, seventh abdominal sternum and genital structures seen from outside usually brownish black, sometimes palish brown. Posterior margin of seventh abdominal sternum sinuately emarginate, with a very short median split and a short median fold, large lateral lobes on either side with a backward spiny process on either side (Text-fig. 464).

♀ GENITALIA: First gonocoxae large, seen from above broader than long, outer margin regular with lobe-like but truncated apices; inner margin regular, convex in middle (Text-fig. 462); intervalvular sacs absent (Text-fig. 468); spermatheca elongated, curved in middle and thicker at apex (Text-fig. 465).

Type material. Holotype ♂, PHILIPPINE ISLANDS: with a label "*Noliphus erythrocephalus* Stål", Riksmus. Stockholm; paratypes, PHILIPPINE ISLANDS: 2 ♀ (*Semper*), Riksmus. Stockholm.

Other material. PHILIPPINE ISLANDS: 1 ♀; CELEBES: 1 ♂; KEY ISLAND: 1 ♂; SOLOMON ISLANDS: 1 ♀; JAVA: 1 ♂, 2 ♀.

This species is very close to *annulipes* Walker and *erythrocephalus* Stål but can easily be separated from the former by the dark black pronotum and propleuron (in *annulipes* these are paler) and from the latter by the two pairs of black dots on the underside of the abdomen (in *erythrocephalus* the black marks are continuous with the connexiva).

Noliphus timoris sp. n.

(Text-figs. 469–471)

Characterized by pale, tinged brownish black pronotum and propleuron with antero-ventrolateral of abdomen without black marks or dots and by the form of ♂ and ♀ genitalia.

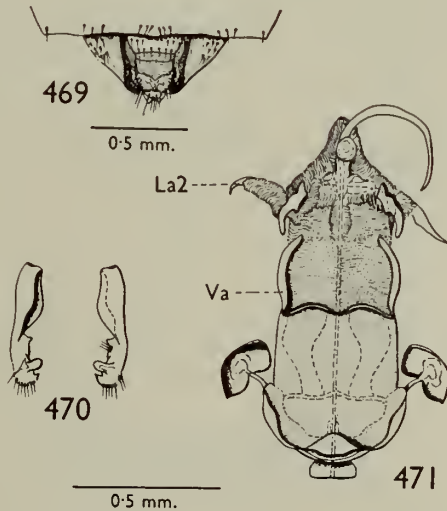
♂. Body length, 13.3 mm., width, 2.8 mm. Head length, 1.6 mm., width, 1.8 mm. Antennae, segment I, 2.7 mm., II, 2.4 mm., III and IV missing. Rostrum, segment I, 1.6 mm., II, 1.7 mm., III, 0.8 mm., IV, 1.3 mm. Pronotum, length, 2.6 mm., width, 2.8 mm. Hind femora and tibiae missing. Distance between ocelli, 0.5 mm., distance between an ocellus and an eye, 0.9 mm.

Body of medium size, brownish black. Head yellowish brown, tinged black, underside yellowish brown, only clypeus, labrum and rostral segments brownish black. Antennae pale, tinged brownish black. Rostrum long, extending slightly beyond third coxae. Propleuron pale, tinged brown, a black line extending from collar on to anterior third of propleuron. Pronotal disc pale, tinged brown, with anterior part behind collar and posterior part from latero-posterior spines brownish black; spines on posterior angles long and sharply pointed at apices. Legs pale, with apices of femora, apices of tibiae and bases of tibiae and tarsi brownish black. Entire hemelytra brownish black, densely punctate. Scutellum brownish black. Abdomen, dorsum pale, tinged brown, third, fourth, fifth and sixth connexiva with brownish black marks; seventh abdominal segment brownish black, abdomen ventrally pale, tinged brown, fifth and sixth venter with median black triangular marks pointing posteriorly, seventh venter, visible portion of eighth segment and pygophore brownish black; no black dot or mark on ventrolateral margins of third and fourth abdominal venter. Posterior margin of seventh abdominal tergum sinuately truncated, without a spine-like backward process on either side of lateral extremities, concealing about two-thirds of pygophore; pygophore rounded, curved and tapering at apex, posterior margin slightly concave. (Text-fig. 469).

♂ GENITALIA: Claspers symmetrically placed (Text-fig. 469); both (dorsal and ventral) thecal appendages present; two pairs of lateral conjunctival paired appendages, second right curved and bifid at apex (Text-fig. 471); frontal conjunctiva with a bunch of spines (about 11 usually) at base of first right conjunctival appendage; aedeagus with "L" shaped dorsal appendage (Text-fig. 471).

No ♀ available for study.

Holotype ♂, TIMOR: Riksmus. Stockholm.



FIGS. 469-471. *Noliphus timoris*, ♂. 469, terminalia, dorsal view; 470, claspers, inner and outer views; 471, aedeagus (inflated), ventral view.

This species can be separated from all the species of this genus except *insularis* by absence of black dots or marks on ventro-lateral of third and fourth abdominal segments. From *insularis* Stål it can be separated by the presence of black triangular marks on the underside of the abdomen in the middle of fifth and sixth segments.

ZOOGEOGRAPHY AND PHYLOGENY

The subfamily Leptocorisinae is represented in all zoogeographical regions, but in the Nearctic and Palearctic it is only found in the extreme southern areas and it is not recorded from New Zealand.

An exact phylogeny of this group cannot be attempted, for there is no fossil material, little knowledge of the biology of many members of the group and none of the biochemistry. Further more the phylogeny and even the classification of the family Alydidae, indeed of the whole Coreoidea is uncertain (Stys, 1961 ; Scudder, 1963). However, a study of the zoogeography and the comparative morphology of the group throw at least some light on the relationships and a very tentative phylogenetic scheme is shown on Text-fig. 472.

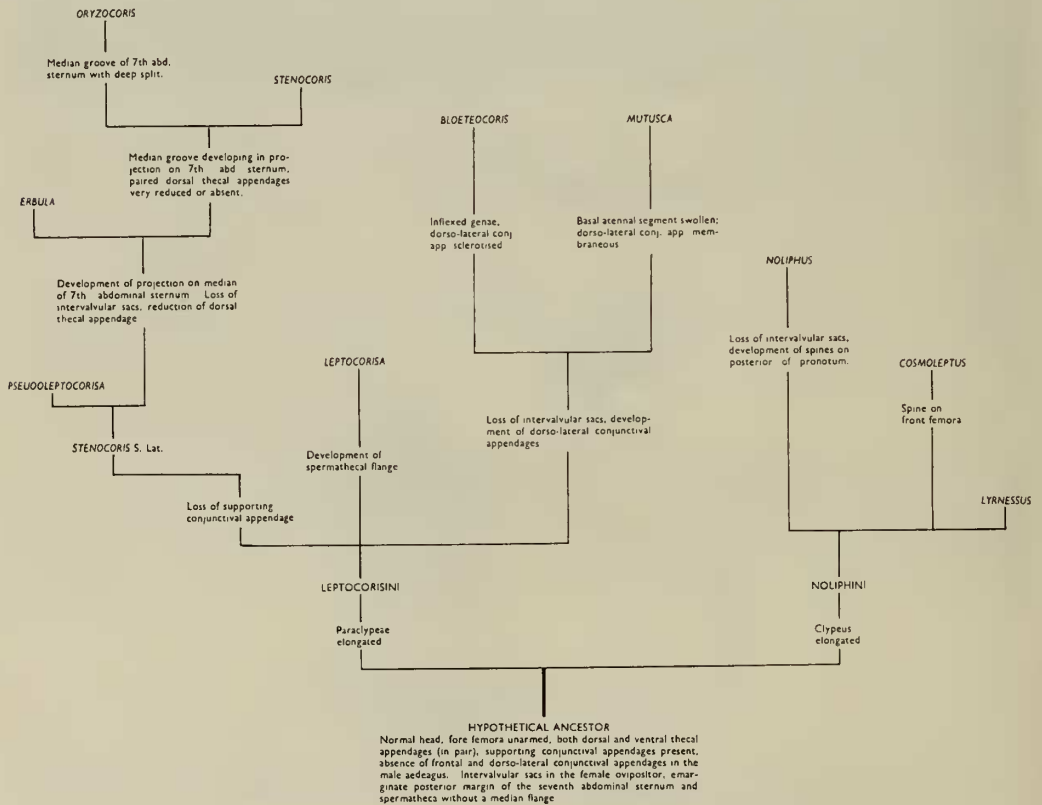


FIG. 472. Phylogenetic tree of the Leptocorisinae.



FIG. 473. Distribution map of *Leptocorisina* spp.

The two tribes Leptocorisini and Noliphini are clearly distinct on the form of head and pronotum, whereas in the Noliphini there are distinctions in the shape and form of the body in the different genera, the body form in the Leptocorisini is remarkably uniform and the taxonomic distinctions are mainly based on characters of the genitalia. It may be that evolutionary pressures due to the habitat (various Gramineae) of the Leptocorisini has restricted the modification of the form of the body; the other large groups of Heteroptera that share this habitat, Stenodemini (Miridae) and Blissinae (Lygaeidae), are also both relatively uniform in body form. The habits of the Noliphini are unknown. Alternatively it may be that the Leptocorisini are more recently evolved and so less differentiated than the Noliphini.

The Noliphini have an interesting distribution, similar to, but rather more extensive than that of the Marsupials: Neotropical region (*Lyrnessus*) and Australian region and Malayan and Philippine sub-regions of the Oriental region (*Cosmoleptus* and *Noliphus*). The centre of evolution of the tribe was clearly in the Australian region, perhaps in the Papuan sub-region; the farthest west that the tribe has spread is north east Sumatra (*C. sumatranus*) but it does not seem to have crossed the Strait of Malacca or the South China Sea. *C. bakeri* is found in the Philippine Islands. *Noliphus spinosus* has the widest distribution of any member of that genus; Java, Philippine Islands, Solomon Islands and north Australia, but the remaining species are, so far as present records show, restricted to the Australian region (i.e. east of Wallace's Line).

In contrast the Leptocorisini are almost world-wide and some of the species have very wide ranges, e.g. *Leptocorisina acuta*, the "Gandhi rice bug", is found throughout the Oriental and Australian regions (except New Zealand). It is considered that *Stenocoris* (*Pseudoleptocorisina*) *erratica* retains more primitive characters than any

other species of the tribe and this, together with zoogeographical evidence, leads to the tentative suggestion that in contrast to Noliphini, the centre of evolution of this tribe was in the Ethiopian-Oriental regions. The subgenera of *Stenocoris* show a series of changes in the form of the posterior margin of the ♀ seventh abdominal sternum running parallel with which is the reduction of the dorsal thecal appendages in the aedeagus. The dorsal thecal appendages are paired in *Pseudoleptocoris*, they are fused in *Erbula* and very small and reduced in *Stenocoris claviformis* and absent in all the other species of *Stenocoris* and in all the species of *Oryzocoris*. The subgenus *Erbula* is entirely Ethiopian, *Stenocoris* is distributed in Ethiopian, southern Nearctic and Neotropical regions and *Oryzocoris* is limited to the southern Nearctic and Neotropical (occurring as far north as Florida and Texas). The Neotropical species of *Stenocoris* stand apart from the rest of the subgenus, more especially in the broad bases of the first gonocoxae that extend to conceal most of the eighth paratergite proximally.

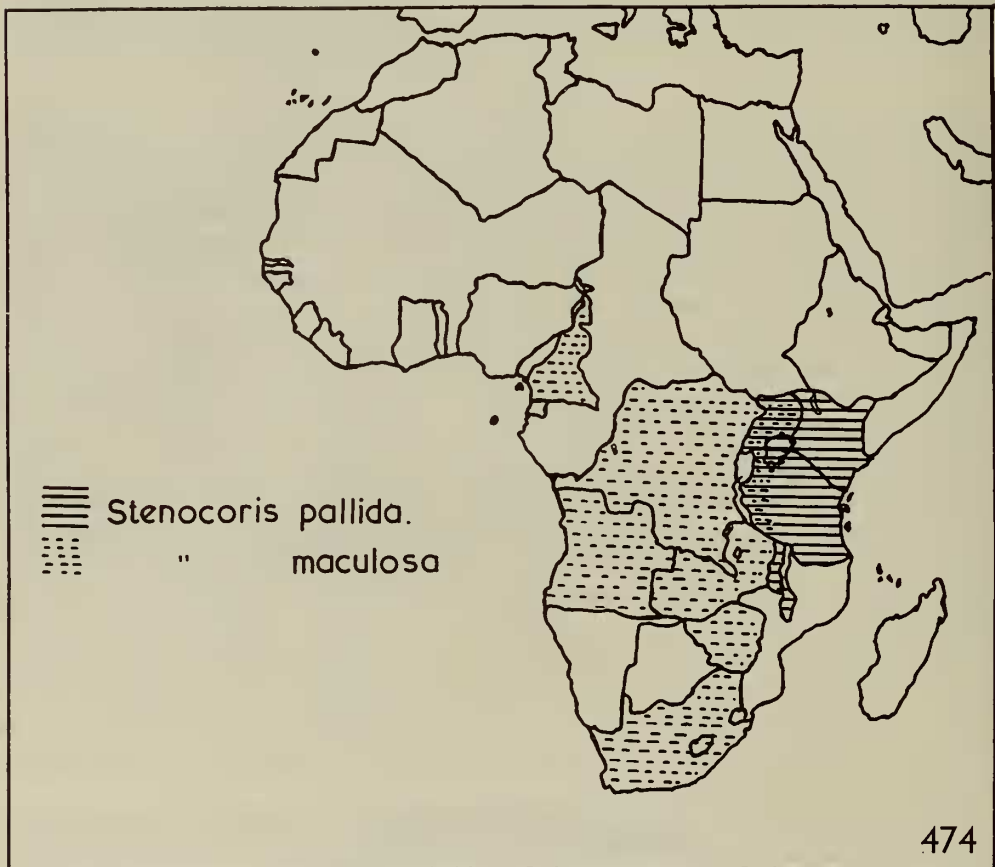


FIG. 474. Distribution map of *Stenocoris* spp.

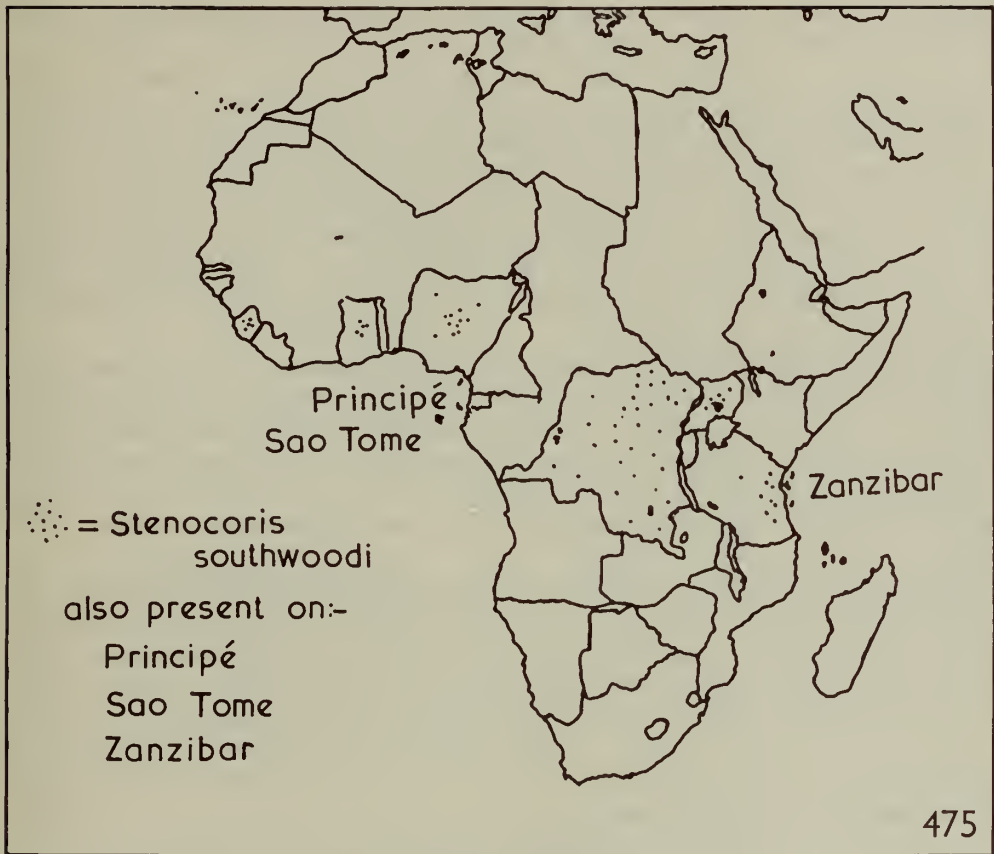


FIG. 475. Distribution map of *Stenocoris (Erbula) southwoodi*.

The remaining genera of the Leptocorisini, *Leptocorisa*, *Bloeteocoris* and *Mutusca*, have Oriental and Australian distributions but *Leptocorisa* is closer to *Stenocoris* than are the other two. *Mutusca* and *Bloeteocoris* might be considered more specialized in having lost the ancestral intervalvular sacs in the ovipositor and developed dorso-lateral conjunctival appendages in the aedeagus. In *Mutusca* one pair of these appendages are present and are membranous in form; running parallel with this character is the entirely swollen basal antennal segment, whereas in *Bloeteocoris* there are two sclerotized pairs of dorso-lateral conjunctival appendages in the aedeagus and this genus also shows remarkable development of genae, the tips of which are acutely pointed and inflexed.

The species of *Leptocorisa* fall into a number of groups :

L. costalis (range Indo-China, Philippines and East Indies) is in many ways the more generalized, showing more characters in common with *Stenocoris erratica*, especially the small membranous appendage in the male aedeagus, whilst *L. biguttata* (Indo-China, Sarawak, Celebes and East Indies) and *L. palawanensis*

(Philippine Islands and New Guinea) occupy a central position in the genus, around which are the four main species groups:

1. *luzonensis* (restricted to Philippine Islands) and *tagalica* extending from the Philippine Islands to Sarawak, Halmahera Island, with two black dots behind the ocelli and brownish black tips to hind femora.

2. *sakdapolrakae* (Thailand, Java, and Sumatra), *discoidalis* (Thailand, New Guinea, Australia, Solomon Islands and New Hebrides) and *solomonensis* (New Guinea and Solomon Islands) with a large rostrum extending beyond second coxae and the black line on the side of the head and prothorax lengthening in the order given above (which also, perhaps coincidentally, corresponds with successive progression of the ranges towards east).

3. *lepida* (North and Central India, Bhutan, Burma and Thailand), *pseudolepida* (South India, Ceylon and Malaya) and *luzonica* (Philippine Islands, Sarawak and Vietnam) (Text-fig. 473) which are smaller than the other species and possess the second right lateral conjunctival appendage, which is short in *lepida*, elongated in *pseudolepida* and elongated and curved in *luzonica*; these appear to form a group of allopatric species, the range of *lepida* being north of that of *pseudolepida* and of *luzonica* north east of that of *lepida*.

4. *chinensis*, *acuta* and *oratorius*, the most widely distributed species of all in the Oriental and Australian regions and major rice pests, show progressive reduction of the lateral black line (extending from antenniferous tubercles up to the lateral side of collar, sometimes like two dots in *chinensis*, represented by one dot at collar in *acuta* and completely absent in *oratorius*) and parallel with this a trend for the apex of the claspers to become united, for whereas they are truncated in *chinensis*, one lobe is produced in *acuta* and finally in *oratorius*, this lobe is enlarged and acutely pointed and the other lobe is lost.

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